

REPRINT OF

ORIGINAL COMMUNICATIONS AND
MISCELLANEOUS EXTRACTS

FROM THE

NEW YORK MEDICAL JOURNAL

VOLUME XLVI

(JULY TO DECEMBER, 1887)



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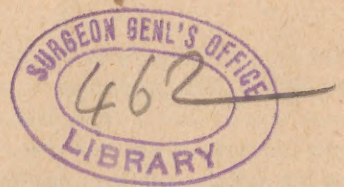
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ORIGINAL COMMUNICATIONS

REPRINTED FROM VOLUME XLVI OF THE NEW YORK MEDICAL JOURNAL.

A CLINICAL STUDY OF NEURALGIAS, AND OF THE ORIGIN OF REFLEX OR TRANSFERRED PAINS.*

By C. L. DANA, M. D.,

NEW YORK.

SOME excuse may be expected for presenting so hackneyed a subject as neuralgia. I have found, however, that the literature on this topic for a good many years has been mainly devoted to the therapeutics, and it has seemed to me possible that a new study of some of the clinical aspects of the disease might be of interest. In particular, I have hoped to begin at least a collection of facts which might show us whether neuralgia in this country and climate presents the same physiognomy that it does in Europe, whence has been got the basis of most American writings and views of the disease.

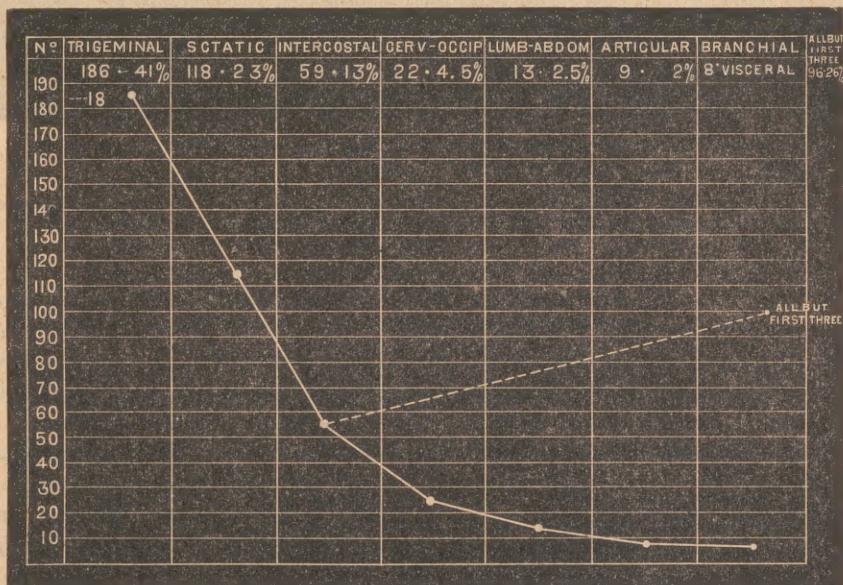
In the second place, I have taken up with especial care the subject of the so-called reflex origin of neuralgia and neuralgic pains, and I trust that my investigations in this line may be of some value.

True idiopathic neuralgia is a rare disease, making up not over 2 or 3 per cent. of the various forms of nervous disorder. Symptomatic neuralgias, reflex or transferred pains, and neuralgic pains from toxic causes are extremely frequent, and make up over 10 per cent. of the total of diseases for which the neurologist is consulted.

The statistics on which I base my remarks include all the neuralgias treated by myself for the past two or three years in dispensary, hospital, and private practice, of which I have preserved notes; also records of statistical value, in some directions, of the neuralgias treated during one year at the Nervous Department of the Manhattan Eye and Ear Hospital ("Annual Report," 1884-'85), the Mount Sinai Dispensary ("Annual

Report"), Demilt Dispensary (from records kindly furnished by my friend, Dr. William M. Leszynsky), and the Out-patient Department of Bellevue Hospital. My own cases amount to 260, while the total number of cases collected is 453.

I shall proceed, first, to present the facts obtained by studying these cases of neuralgia as a whole.



Comparative frequency of occurrence of different forms of neuralgia—453 cases. The dotted line indicates the comparative frequency of all neuralgias—except trigeminal, sciatic, and intercostal—considered together.

Frequency.—The table and chart which I have here show that, of 453 cases of neuralgia, 186, or 41 per cent., were of the trigeminal nerve; next to this come the sciatic, with 23 per cent., and the intercostal, with 13 per cent.; then follow the cervico-occipital, 4.5 per cent., the lumbo-abdominal, 2.5 per cent., and the articular, 2 per cent. The brachial is slightly less, while none of the other different neuralgias form much more than a fraction of one per cent. of the whole. This distribution of neuralgias is not in any striking way at variance with those of such other observers as I could find.

Form of Neuralgia.—Trigeminal of all forms, 186 (41 per cent.); supra-orbital, 39; migraine, 31; mixed, 17; infra-orbital, 3; infra-maxillary, 5; tic douloureux, 5—100.

Sciatica, 118 (23 per cent.); intercostal, 59 (13 per

* From the "Journal" of July 23 and 30, 1887. Read before the Medical Society of the County of New York, December 27, 1886.

cent.); cervico-occipital, 22 (5 per cent.); lumbo-abdominal, 13; angina pectoris, 7; gastralgia and neuralgia, 8; articular, 9; crural, 6; brachial and cervico-brachial, 8; testes, 2; urethral, 1; parietal, 2; digital, 1; plantar, 1; palmar, 1; pododynia, 1; coccygodynia, 1; universalis, 1; epigastric, 1; ovarian, 3; larynx,

in a striking way, the general representative nature of my collected cases.

With regard to age, the following figures are obtained:

Age.—10 to 25, 99; 25 to 35, 66; 35 to 45, 68; 45 to 55, 38; 55 to 65, 16; 65, 5—292.

A comparison of these figures with those of other observers will show that neuralgias in this city attack persons at an earlier period of life than is the case with patients observed by French and German physicians. Thus, among 543 cases collected by Erb and reported by Valleix, Eulenburg, and Erb, only 171 occurred before the thirtieth year, and about 235 before the thirty-fifth year, while in my cases there were 165 out of a total of 265, or nearly two thirds, before the thirty-fifth year. In my cases one third occurred before the twenty-fifth year, while in Erb's one fifth occurred before that time.

In comparison with Classin's statistics the same result is shown. Thus, 30 per cent. of his cases and 45 per cent. of my own occurred before the thirtieth year.

Sex.—As regards sex, I find that there were 122 males and 199 females, giving a proportion of about 3 to 5. In Erb's 821 collected cases the ratio was about as 4 to 5 (364 to 457). In Classin's cases the males formed 37·8 per cent. (160), the females 62·2 per cent. (263). These figures are absolutely identical with mine, confirming again the representative character of my cases, and they enable us to say, with much definiteness, that women are more affected with neuralgias than men in the proportion of 5 to 3. If anything, women in this country are attacked in a larger proportional amount than men.

With regard to seasonal influence, not much that is definite has, so far, been established. In my own cases I found the figures as follows: Winter, 96; spring, 49; summer, 50; fall, 76—271.

From this it will be seen that the greatest number of cases occur in the winter months; that there is then a sharp fall in the spring, when the number reaches its lowest point. The number then slightly increases in summer, and reaches a still higher point in the autumn.

The figures of Classin show the greatest number in summer, 117; next in winter, 109; then spring, 107; and last in the autumn, 101. There is certainly, therefore, an increase in neuralgias in summer over the number in spring, while, doubtless owing to our climate, we have a much greater proportional number in the autumn and winter season than is the case abroad. The maximum

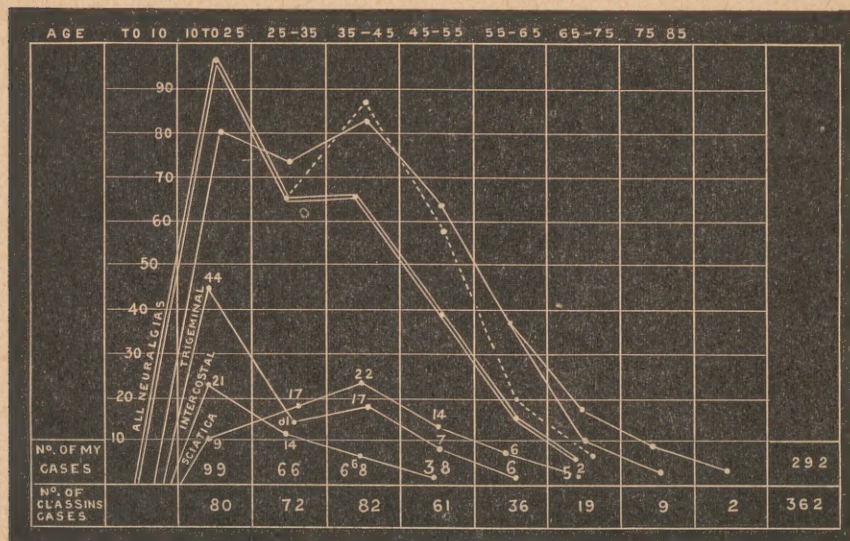


Chart showing the absolute and relative prevalence of neuralgia with reference to age.

The double line represents my own cases; the upper single line, Classin's. The dotted line shows the relative number of neuralgias to persons living at ages indicated. (Of 1,000 persons born, 714 are alive at the 15th year, 500 at the 40th, and 333 at the 65th year.) Classin arranges his ages from the tenth, twentieth, thirtieth, etc., years. I have been obliged to change this and give approximate figures, for the sake of comparison.

1; lingual, 1; spinal, 4. All neuralgias, except trigeminal, intercostal, and sciatic, 26 per cent.

As compared with the statistics of Dr. J. Classin, of Kiel, who collected 434 cases, it seems that we have 10 per cent. more trigeminal neuralgias, and slightly more intercostal neuralgias, while the per cent. which he gives of sciaticas (24 + per cent.), and of all the neuralgias except trigeminal, sciatic, and intercostal (26 + per cent.), is almost exactly the same as my own; proving,

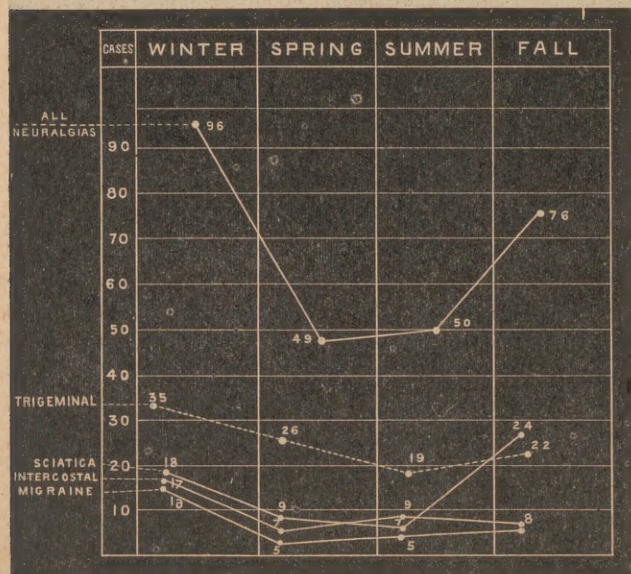


Chart showing the relation of neuralgias to the season—271 cases.

number of cases in any one month in Classin's tables was in June, and the next in January.

It is at least interesting to establish the fact that in this city neuralgias do not bloom in the spring, but delay their efflorescence until summer, from which time they steadily increase in number in this climate until the end of winter is reached.

Of the special forms of neuralgia, those affecting the different branches of the fifth pair of cranial nerves are by far the most frequent, even excluding, as we do, the numerous diffuse head-pains of all kinds.

Neuralgias of the Fifth Pair.—The fifth pair of cranial nerves is affected with neuralgias of widely different types. They may be classed as follows:

1. The supra-orbital neuralgias. These are the most frequent in number. Supra-orbital neuralgia may occur as the expression of a constitutional neuropathic state—it may, in other words, be a true neurosis; but far more frequently it is symptomatic of some toxic or anæmic state.

2. Infra-orbital or supra-maxillary neuralgia.

3. Infra-maxillary neuralgia.

4. The mixed forms.

5. True tic douloureux. This is a comparatively rare disease, which may take the form of any of the above-mentioned types.

6. Migraine. This generally affects nearly all the branches of the fifth, radiating to the occipital nerves, but it often localizes itself in the upper ophthalmic branches.

We may have, then, true neuralgic neuroses, clinically different from tic douloureux, affecting one or other branch of the fifth. These are not very rare. We have true *tics*, which are rare. Then we have symptomatic neuralgias affecting the different branches and these are very common.

Finally, we have migraines which are also common. The comparative number is shown by the following ratio in 100 cases.

Supra-orbital neuralgias (all forms)	39	per cent.
Migraine	31	" "
Mixed trigeminal neuralgias	17	" "
Infra-maxillary	5	" "
Tic douloureux	5	" "
Infra-orbital	3	" "

Trigeminal neuralgias affect the female sex more than the male in the proportion of 49 to 23, or 2 to 1.

The effect of the winter season in bringing out trigeminal neuralgias is very marked, as shown by the following: Winter, 35 (35 per cent.); spring, 26 (23 per cent.); summer, 19 (19 per cent.); autumn, 22 (22 per cent.).

Winter and spring are therefore the worst seasons for the trigeminal nerve, and this is especially the case with *tics*. Patients suffering from tic generally get some relief in the summer months.

With migraines this is not the case. As will be shown later, summer stands close to winter in the number of these cases.

The trigeminal nerve is the one earliest in life affected

with neuralgia, which then shows itself generally in the form of migraine. Aside from the painful *tics*, trigeminal neuralgias are oftenest met with in persons under twenty-five or thirty years, as shown by the following: 10 to 25, 44 cases; 25 to 35, 16; 35 to 45, 17; 45 to 55, 7; 55 to 65, 1—85.

There is an increase in trigeminal neuralgias after the age of thirty-five, due to the development of *tics* and toxic neuralgias. Relatively to the population the number is nearly one third greater between the years 35 and 45 than between 25 and 35.

In supra-orbital neuralgias the left side is affected more than the right in the proportion of 14 to 9. This fact has been observed by others, and recently by Faucheron, who analyzed 100 cases. In the other forms no definite rule can be laid down.

Taking all forms, a preponderance is shown in favor of the left side 31 to 23. In migraines and *tics* the sides are about equally affected (right side 14, left 13).

In most migraines and most supra-orbital neuralgias the attacks were worse or began in the mornings. This was especially the case with those supra-orbital neuralgias curable with quinine and arsenic.

On the other hand, most of the infra-orbital, infra-maxillary, and mixed trigeminal neuralgias were worse in the afternoon and night, especially those forms showing a rheumatic origin. Some indication for treatment is furnished by these facts, for, if the observations are corroborated, they show that rheumatic influences affect the lower two branches of the fifth in a proportionally greater frequency.

A study of the causes of my cases does not furnish anything especially new.

I could only find 5 cases—4 supra- and 1 infra-orbital—that I felt at all sure were due to malaria.

Child-bearing, anæmia, and exposure were prominent causes.

Heredity is a very indirect element except in migraines. On the other hand, the nervous temperament is very often present, and the trigeminal nerve indeed seems to be the first station at which is waved aloft the signal that another victim has been haled into the neuropathic circle.

Migraine.—This form of neuralgia occurs oftener in the female in the proportion of 1 to 3 (males, 8; females, 28).

These attacks occur oftenest in the winter, least in the spring, more in summer, and still more in the autumn: Winter, 16; spring, 5; summer, 7; autumn, 8—36.

So far as I could find, in all my cases except one there was in the main an angeiospastic condition of the arteries of the head. Angeiospastic migraine is the characteristic form in America.

In almost all cases migraine was an hereditary or at least a family disease, alternating sometimes with other neuroses, especially asthma and other neuralgias.

I found two cases only which appeared to be due to asthenia and refractive errors of the eye. Almost all

responded well to treatment, and I was not able to convince myself of any peculiar nasal or pharyngeal irritations.

Permit me to add here that the idea that migraine is a disease of the sympathetic system is one of the old medical superstitions which, with the old idea of the sympathetic system, ought to be done away with entirely, and which hardly deserves to be discussed with seriousness. Migraine is a general neurosis like epilepsy, showing itself in nervous discharges, mainly in the area of the fifth. Symptomatically, therefore, it is to be spoken of as a form of trigeminal neuralgia whose manifestations are strikingly associated with vascular and secretory and sometimes motor, visual, and auditory disturbances.

But migraines may occur with very little vascular change, and there are nervous or sick headaches which stand half-way between typical migraine and ordinary rheumatic or gastric headaches.

To illustrate this: There is in particular a form of neuralgia which is often called migraine, and is popularly known as one form of sick headache. In this the pain begins in the back of the head on one side and speedily radiates over to the face on the same side, affecting sometimes the orbital and ciliary nerves; sometimes all the branches of the fifth. It is sometimes accompanied by nausea and even vomiting (especially if right-sided?), but this is not always the case. The face is generally somewhat pale, but not unilaterally so; the eyes are not suffused, nor is there often any visual or aural disturbance as in migraine. Sometimes the pain remains in the occipital nerves, and I have met with one patient who localizes her pain there entirely, and who always vomits during the attack. The paroxysms are brought on oftenest by barometrical disturbances at the onset of cold, damp weather, or in other cases by the approach of the menses, or by emotional excitement. In some cases the attacks are mild and consist only of some dull pains in the occipital and facial regions. While some of these cases may be diagnosticated as migraine, others resemble ordinary attacks of cervico-occipital neuralgia radiating to the fifth nerve, and other cases are likened to bilious headaches.

These pains are all, in my opinion, migrainous in character, though often not recognized as such. They stand in the same relation to typical migraine as hysteroid convulsions stand to the true epileptic attack. They should be treated on this theory.

Intercostal Neuralgia.—This form of neuralgia was met with in 45 cases, of which there were 5 in males and 37 in females. This gives a larger proportion to females than the statistics of Valleix and Bassereau (11 male to 51 female).

The seasonal influence shows a great preponderance in favor of the winter months: Winter, 17; spring, 7; summer, 9; autumn, 8. The attacks occur in the left side more than the right in the proportion of 1 to 3 (right side, 6; left, 19).

Age.—From 12 to 25, 21; 25 to 35, 14; 35 to 45, 6; over 45, 4—45. Most are between the ages of 20 and 35.

Sex.—Male, 5; female, 37.

Season.—December, January, February, 16; June, July, August, 7; September, October, November, 9; March, April, May, 6.

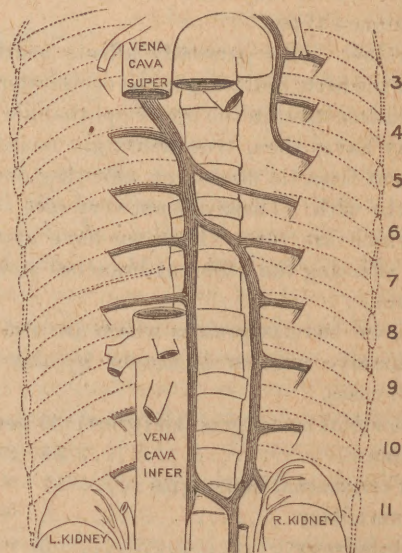
Causes.—Cardiac disease, 1; neurasthenic and anæmic states, 12; ague, 6; tobacco-working, 1; exposure and muscular strain, 6; diabetes, 1; neuritis, 1; dyspepsia and anæmia, 2.

Side.—Right side, 6; left, 19; undetermined, 18.

Pathology.—This form of neuralgia occurs oftenest in neurasthenic, anæmic, and overworked women. Exposure and muscular strain are often noted.

Exciting causes are dyspepsia and constipation and uterine trouble. Mammary neuralgia is especially often attributed to some uterine trouble. But mammary neuralgia is rare compared with the so frequent complaint of "left-sided pain."

This left side is oftener affected according to Luschka, because the arrangement of the azygos veins on that side tends to allow a stasis of blood, those veins passing underneath the descending aorta and thoracic duct.



Others ascribe left-sided pain to a more frequent occurrence of pleuritic and pulmonary congestions on the left side, or to the reflex influence of the stomach.

Uterine disorders which produce a congestion of the pampiniform plexus in the broad ligaments are said to produce left-sided pain by reason of the fact that there are no (or few) valves in these veins, that they pass behind the sigmoid flexure (in which position they may be compressed), and that they empty into the renal vein at a right angle. The objection to this oft-quoted theory is that the veins in question are below the level of exit of the affected nerves, so that any pressure pain would be felt in the thigh or gluteal region unless it were reflected or transferred to higher branches.

More has been said than need have been about the

reflex origin of intercostal neuralgia. In my experience only a small proportion are cases of transferred or reflex origin. Most intercostal neuralgias have much the same history and course as supra-orbital neuralgias, and they respond to anti-neuralgic treatment in the same way. I shall return to this subject later. Probably one half the pains in the side are myalgic in nature, and should be classed as pleurodynia. These pains can be distinguished by the history of their origin and of rheumatic influences, by their diffuseness and dullness, by the great tenderness on pressure, and the pain produced on taking a deep breath.

There is another considerable proportion of cases in which the pains are mainly neuralgic, but yet there are some evidences of muscular complications.

In the third class of cases there is the pure stabbing neuralgia, the pain paroxysmal and not increased, as a rule, by movement or pressure.

These distinctions between neuralgic, myalgic, and neuro-myalgic pains are important from a therapeutic point of view. In the purest types of intercostal neuralgia, anti-rheumatic remedies rarely do good, while the neurotic and anodyne drugs check it very rapidly.

A study of the various pains in the back and side leads me to this therapeutical aphorism—viz., plasters are for the back, blisters for the side. This means simply that most side-pains have a predominating neuralgic element, while most back-pains are myalgic, owing to the greater muscular mass at this point. Anodyne and stimulating plasters, as ordinarily made, have little influence over neuralgia.

The preponderance of pain on the left side seems to me probably due in part to the law that the left half of the body has less resisting power, so far as nervous phenomena are concerned, than the right, exhibiting at all levels a greater number of neuralgic, spasmodic, and other sensory and motor troubles of functional origin.

The so-called tender points in intercostal neuralgia are certainly much less frequently found than is supposed. There is tenderness over the seat of pain always; sometimes a second tender point is found in the back or anteriorly near the sternum, while only very rarely have I found the typical three tender points at the exits of the posterior, lateral, and anterior branches of the intercostal nerves. They may be felt in very chronic cases.

There is a form of intercostal neuralgia not generally recognized as such, because the pain is seated in the neighborhood of the anterior upper crest of the ilium, just at the distribution of the lateral cutaneous branch of the last dorsal nerve. The pain is quite sharply limited and there is tenderness on pressure.

Cervico-occipital and Occipito-frontal Neuralgias.

—Total cases, 18.

Sex.—Male, 4; female, 14.

Cause.—Sequel to cerebro-spinal meningitis, 2; hysteria, neurasthenia, 6; anæmia and miscarriages, 1; neurasthenic and rheumatic, 3; syphilis, 2.

Season.—Autumn and spring, 8; winter and summer, 3.

Age.—Three fourths between the ages of 20 and 36; none below 20.

There are three types of neuralgic pains in the four upper cervico-occipital nerves.

I. One of these is the migrainous, and has been already described.

II. The second type is one of typical neuralgia with tender points, and a continuous course lasting for days or weeks. It is unilateral, and has the characters ordinarily described in the text-books. I have now a patient who has this true neuralgia with occasionally pseudo-migrainous attacks. The pains sometimes reach the character and intensity of true ties.

III. The third type is one found in hysteria and spinal irritation. In this disorder the pain is more bilateral or central, or perhaps shifting, and it is especially characterized by a sharp boring pain just below the occiput. With it there may be evidences of cerebral congestion or anæmia, with vertigo and faintness, but not vomiting. It is one of the hysterical neuralgias and indicates cervico-spinal irritation. The boring pain is almost pathognomonic.

It is a noticeable fact that the four upper cervical nerves supplying motion and sensation to the back and base of the skull are attacked by three painful neuroses just as with the fifth nerve, viz.: migrainous pains, ordinary neuralgic ties, hysterical neuralgias (clavus.)

Lumbar Neuralgias.—While lumbar pains of muscular and reflex origin are as common as humanity, true dorso-lumbar neuralgias are comparatively rare. I have notes of only eleven cases.

Dorso-lumbar neuralgias affect either the upper and short branches or the lower and longer branches of the lumbar plexus.

I. In the former case we have pains in the small of the back, the upper part of the buttocks, the neighborhood of the crest of the ilium, and, more rarely, in the hypogastrium, inguinal region, and scrotum or labia.

These pains form the upper lumbar or lumbo-abdominal neuralgias. They are affections of the branches of the first and second lumbar nerves.

Lumbo-abdominal neuralgias occur usually in women after the thirtieth year. They come on late in life like sciatica.

It is upon the upper half of the lumbar plexus also that the lumbo-abdominal pains are reflected which result from uterine displacements or from other irritations of the pelvic organs.

II. The neuralgias of the lower branches of the lumbar plexus produce pains in the outer, anterior, and inner part of the thigh, external cutaneous nerve, genito-crural and interior crural nerves, the front of the knee, and inner part of the leg (crural nerve and obturator nerve). These form what are generally known as femoral or crural neuralgias. True neuralgias of these branches are very rare, according to both Anstie and Valleix; but here again reflex or transferred pains from

the pelvic organs are not infrequently felt. Crural neuralgia is also sometimes felt in connection with sciatica.

Painful Thigh.—It appears to me that crural neuralgias of a certain type are not so very uncommon. Certainly I have met with several cases of what might be called, in a general way, "painful thigh." The patients in age and history are like those suffering from sciatica. They complain of pain in the front of the knee and the anterior and outer parts of the thigh, but have no pain posteriorly, and none below the knee. The internal branches of the anterior crural nerve do not seem to be affected, while the middle and external cutaneous branches and the genito-crural nerve are involved. In one case I observed anæsthesia of the skin.

These cases do not correspond with classical descriptions of crural neuralgia, and they are sometimes regarded as irregular forms of sciatica, because of the diffused pain and stiffness of the thigh. They should be treated in the same way as sciaticas.

The upper lumbar neuralgias may be mistaken for lumbago or hip-joint disease. The lower lumbar neuralgias often present a general resemblance to irregular sciaticas. It should be remembered that neuralgic pains in the thigh alone are generally to be referred to a lumbar plexus.

Sciatica.—The total number of sciaticas available for statistical purposes is 73; 25 of these were in females, 48 in males, giving a proportion of 1 to 2. This gives a larger proportion to women than the German statistics of Erb and Eulenburg (65 to 17), while it gives a smaller proportion than the French statistics of Valleix, 72 to 52. The facts regarding age and season are summarized below, and show a rather larger number of cases in early life than is usually believed to occur, and also a decided preponderance of the disease in the autumn.

Age.—Fifteen to 25, 9; 25 to 35, 17; 35 to 45, 23; 45 to 55, 15; 55 to 65, 7; above 65, 2. As there are twice as many people living between 15 and 35 as between 35 and 65, and only 26 sciaticas to 47, sciatica is relatively nearly four times as frequent between the ages of 35 and 65. Winter, 21; spring, 9; summer, 8; autumn, 24.

As to the causes: Twelve gave a history of exposure and muscular strain. Ten gave a muscular rheumatic history. Only one had ever had acute rheumatism. Nine gave a distinctly neurotic history, having previously had other forms of neuralgia (3), epilepsy (2), or hysteria (1).

In 3 there was a phthisical taint, in 1 sexual irritation, in 1 probably malaria, in 2 syphilis, and in 1 constipation with piles and a very sedentary life.

Thus it appears that the age of forty and the male sex, and a tendency to muscular rheumatism or a neurotic, especially a lithæmic, constitution, prepare the way for sciatica, and that exposure and muscular strain or some nervous irritation precipitate it.

In many cases one gets every evidence of there being a neuritis—such as anæsthetic patches, coldness of the

limbs, atrophy, and even slight partial degenerative reactions in the muscles.

THE ORIGIN OF "REFLEX" OR TRANSFERRED NEURALGIAS AND PAINS.—No point connected with the clinical history of neuralgias is of more interest than that of their so-called "reflex" origin. The production of migraine has been attributed, as we have seen, to the stomach and liver, to the eye, the tonsils, and the nose. Digital, plantar, cardiac, intercostal, and, in fact, all the neuralgias have been attributed to extrinsic causes. So much has appeared in literature regarding the effects of such remote irritation that the importance of this influence has perhaps become exaggerated. At the same time the subject is one deserving of further and persistent study until its present many obscurities are removed.

In this study it is to be remembered that the term reflex used here is not technically a correct one. An irritation in the stomach may cause a pain which is felt in the forehead. The impulse, starting in the stomach nerves, is conveyed to the cortex of the brain, and this is felt as a sensation excited by the trigeminal nerve. It is a transferred sensation, not a reflex one, since the impulse is afferent only, and the outward reference of the pain is purely psychical.

Reflex pains are, therefore, really "transferred pains" as a rule. In some cases it may be, however, that irritations provoke reflex vaso-motor changes in remote parts, and the anæmia or congestion thus produced causes pain. There may be, therefore, "indirectly produced reflex pains." The term reflex pain is so widely used that I can not attempt to discard it. I use it, however, with the explanation here given.

From a study of many cases of my own for the several years in which my attention has been directed to this subject, from a study of the very meager literature bearing on it, and from personal inquiry among gentlemen who have had large experience in various special fields, I am able to collect the following facts regarding the various organs, the viscera, and their relation to transferred or reflex pains:

With regard to the Eye.—In the accurate determination of reflex pains the ophthalmologists have made much progress. I am greatly indebted to my friend, Dr. William O. Moore, for furnishing me, in an admirably succinct form, the results of his studies and experience in this direction. In general terms, the following statements may be accepted:

Reflex pains are produced by asthenopia, of which there are four types, as follows:

Asthenopia.—One, refractive; 2, accommodative; 3, muscular; 4, neurasthenic.

The pain in No. 1 (refractive asthenopia) is usually of a dull, heavy character, and is felt in the forehead and along the supra-orbital branches after the eyes have been used for some time.

In No. 2 (accommodative) the pain is felt in the eye, and is one of fatigue. It is of a dull character. This pain, however, is not reflex.

In No. 3 (muscular) there is a sense of pain or, rather, of drawing, often referred to the back of the orbit, sometimes to the back of the head.

In No. 4 (neurasthenic) the sensations are much the same as in No. 3.

In addition, it appears to be established that refractive asthenopia in one eye may give rise to migraine.

The view that nearly all migraines are due to refractive errors, or to imperfection in the muscular apparatus of the eye, is certainly, in my experience, incorrect. It is well to remember that, while eye troubles may cause neuralgia, so, on the other hand, neuralgias of the fifth may cause eye troubles—such as blepharospasm, mydriasis, myosis, and asthenopia (Faucheron, "Rec. d'ophthal," March, 1881). Occasionally eye irritation causes occipital or fronto-occipital pain, but this does not seem to be the rule. Iritis may cause pain felt over one half of the cranium, like a migraine.

Chronic diseases of the ear have been known to produce trigeminal neuralgias in very rare instances. It is more often that irritations of the maxillary branches of the fifth cause otalgia. My friend, Dr. Sexton, informs me that, as the result of examining the records in a large number of cases, he could not formulate any rule as to reflex pains of aural origin—*i. e.*, from chronic aural disease. Dr. E. Legal ("Deut. Arch. f. klin. Med.," xl, 2, p. 201) says that patients with pains in the occipital or temporal region should be examined for pharyngeal or middle-ear trouble. He reports ten cases in which, by using Politzer's method, or by catheterizing the tubes and treating the throat, the pains were relieved.

Dental caries may cause severe and intractable trigeminal neuralgia. The relation between the two was first studied by Neucourt ("Arch. gén. de méd.," June, 1849), who gave some striking examples. Lauder Brunton ("Lectures on Diseases of the Stomach") has also studied the matter in reference to localization, and believes that reflex pain from dental caries is usually felt in the temple, or, more specifically, a decayed molar in the lower jaw gives a temporal or occipital headache, a decayed molar in the upper jaw a temporal headache farther forward. Decayed canine or incisor teeth are likely to cause frontal or vertical headache. Such pains may be accompanied by sympathetic dilatation of the pupil.



Diagram showing the seat of pain in migraine or occipital headache depending on decayed teeth or defects of the eyes. The shaded area shows the seat of the pain; the spot in each area indicates the seat of tenderness on pressure.—Brunton.

The results of nasal and pharyngeal irritation have been fully discussed in late years. It seems to be well established that there are sensitive areas in the nose, usually in the region of the inferior turbinated bone

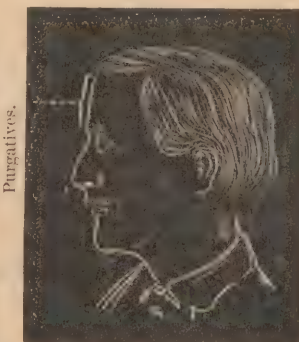
and its cavernous tissue, which may give rise to frontal headache, migraine, neuralgia of the larynx, and of the tongue (B. Robinson, "Med. Record," Jan. 30, 1886). Chronic pharyngitis and amygdalitis may cause migraine (Lorent, A. Jacobi, "Med. Record," Jan. 30, 1886), and the same trouble, according to Trautmann, is produced by chronic or subacute inflammation of the pharyngeal tonsil.

We have one authority (Hack) curing 240 cases of hemicrania by cauterizing the inferior turbinated bone; another, Trautmann, curing 85 out of 87 cases of the same disease by destroying the pharyngeal tonsil. Lauder Brunton attributes migraine in some cases to the reflex effect of dental caries ("Dis. of Digestion," p. 84).

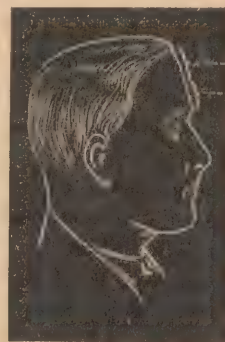
As others have reported almost equally extraordinary results from treating the eyes, it is plain that there are some errors here not alone of refraction, but also of observation or deduction. The inference is that almost any active surgical interference in the region of the head will cure 90 per cent. of migraines, or of so-called migraines. I am forced to the conclusion that the diagnosis in many of these cases was incorrectly made, and that in others the patients were not followed up for a very long time. We know that migrainous patients will sometimes go for months without any attack of pain.

According to Dr. C. C. Benson ("Medical World"), but on what authority I do not know, "when pain is located below the superciliary ridges, including upper eyelids, to the external angular processes on either side, the nasal passages and buccal cavity will be the seats of disturbance."

Irritations from the stomach cause reflexly a large variety of pains. It is not possible to decide always whether these pains are reflex or are due to vaso-motor



Showing the position of the frontal headache which in cases of constipation is relieved by salines.—Brunton.



Showing the position of the frontal headaches relieved by acids and alkalies in the absence of constipation. The lower is relieved by acids, the upper by alkalies before meals. The lower one also indicates the occasional position of headache caused by straining the eyes.—Brunton.

disturbances, or the circulation of morbid products in the blood, as in cases of fermentative dyspepsia and of constipation associated with dyspepsia.

We all know that the simple ingestion of a glass of ice-water will cause a sharp frontal or temporal pain.

Lauder Brunton finds that constipation and presumable intestinal irritation cause a diffuse frontal headache over the whole brow. When there is no constipation and the condition is one of gastric irritation, the pain is either just above the eyes, or more rarely in the occiput (when it will be relieved by acids), or just at the roots of the hair (when it will be relieved by alkalies). (*Loc. cit.*)

Gastric irritation, according to Lange, more often causes thoracic pains and pains in the arms, but especially pains in the epigastrium and hypochondrium. Left-sided pains, resembling intercostal neuralgia, have been thought to be due sometimes to stomach disorder. Leoni, from his studies of cases, maintained that dyspepsia was sometimes a cause of intercostal neuralgia. (Axenfeld and Huchard, "Traité des névroses.") Revillout ("Gaz. des hôp.," 1873) makes the same statement. Desnos reports a case of intercostal neuralgia (Desnos, "Dict. de méd. et chirurg. prat.") caused by ulcer of the stomach. Besides this, both functional and organic diseases of the stomach produce transferred pains referred to the cardiac plexus, producing symptoms resembling angina pectoris.

I have met with a number of cases of neurotic, anæmic young women who complained of attacks of heart-pain and respiratory oppression resembling angina; and the clinical picture is so distinct that I think we may speak of a "pseudo-angina pectoris of gastric origin." Dr. Long Fox ("Diseases of the Sympathetic") reports the case of the distinguished surgeon, Mr. Hilton, who was attacked three years before his death with severe angina pectoris. After suffering intensely from this for several months, the pain gradually wore away, and the symptoms of cancer of the stomach developed. Dr. Moxon (*loc. cit.*) speaks of a heartache of gastric origin, and its occurrence is no doubt familiar to all.

The scapular or shoulder pains in dyspepsia, and the pains felt between the scapulæ, due to the involvement of the posterior branches of the second to the sixth intercostal nerves, are common phenomena familiar to all.

Gastric irritations must have a certain severity to be felt as pain in the stomach or epigastrium, and in these cases there is doubtless, as a rule, some muscular spasm of the stomach-walls.

The milder irritations produced by gas, undigested food, excess of acid, etc., seem to be reflected most often upon the upper intercostal nerves or the cardiac nerves, vagal or sympathetic. The headaches in gastric irritation so often involve some toxic element that we can not speak of their origin with much positiveness.

The stomach and intestines are probably the most frequent cause of transferred pains; after this I would place the uterus and its appendages, and next the eye or heart. Lange considers that the heart ranks second.

In kidney disease neuralgic pains may be felt in the lumbar region, radiating forward to the lower abdomen and genitals—in other words, a lumbo-abdominal neuralgia is produced. In a case of renal colic I have observed the pain to be repeatedly centered about the anterior superior crest of the ilium.

Pains started up by the gall-bladder are felt in the right side of the thorax and right arm, while it is one of the aphorisms of medicine that disorders of the liver may cause pain in the right shoulder. Bilious headaches, cured by a dose of calomel, I have observed to be located sometimes in the vertex and occiput.

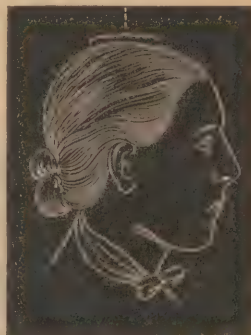
In abscess of the spleen there is a pain felt in the left shoulder (Grottonelli, Wardell).

I am unable to make any very definite statements as to what are the most frequent and characteristic neuralgias produced by pelvic disorders. In answer to letters of inquiry on the subject, my friends, Dr. A. J. C. Skene and Dr. H. T. Hanks, write that they are unable to formulate any rule. Vertical headaches, infra-mammary pains, and lumbo-abdominal pains, are all very frequent. Valleix thought that headaches were most frequently caused by uterine trouble. The vertex pain so often spoken and written of as a pelvic reflex is often, in my experience, an indication simply of anæmia. In this view I find I am corroborated by Dr. Lauder Brunton, in the work cited.

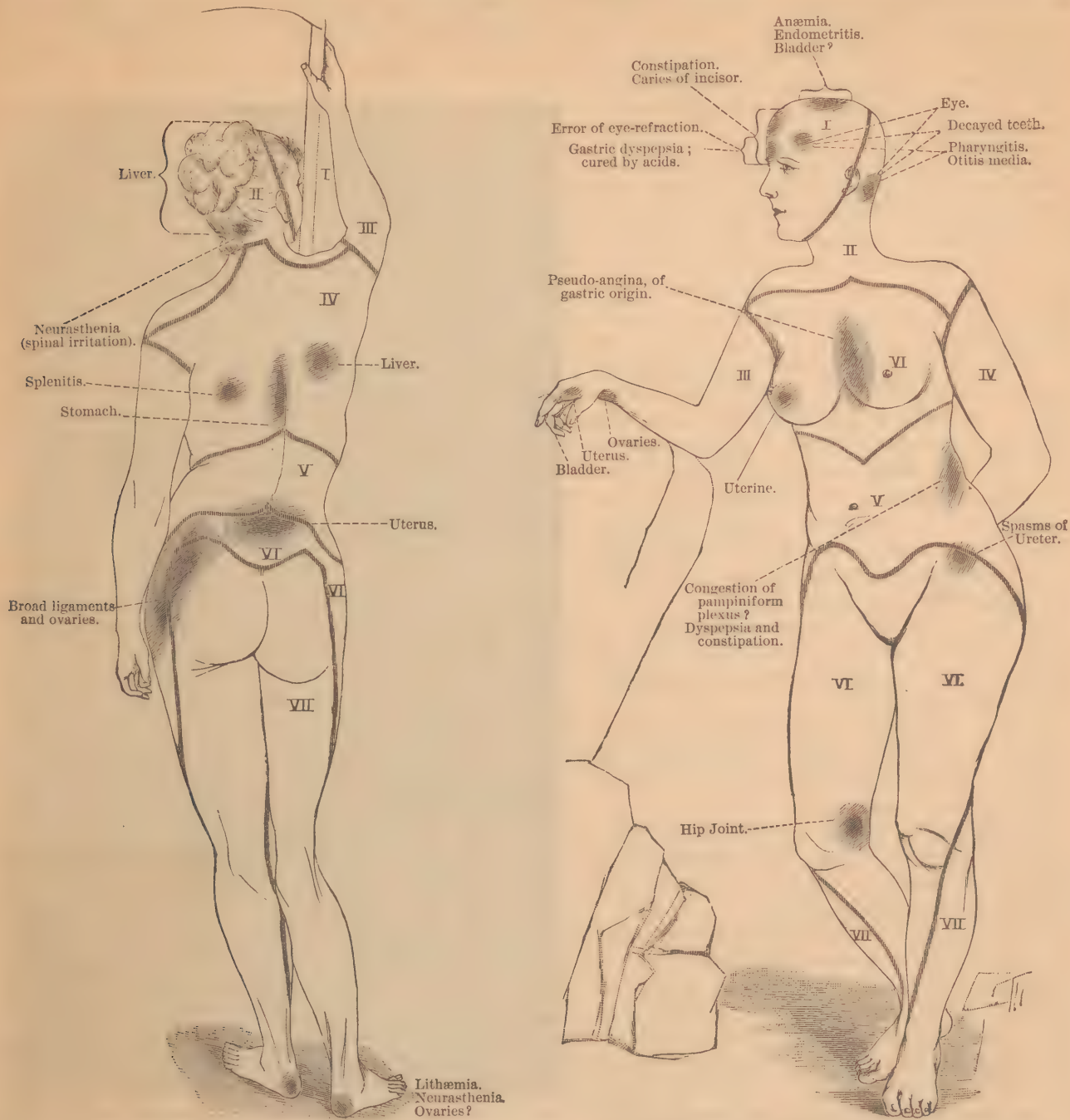
Lange says (*loc. cit.*) that in uterine troubles the reflex pains occur oftenest in the form of arthralgias. I have had a patient suffering with painful spasms of the bladder, who had intense pain in the palms of the hands every time she had a bladder spasm ("Med. Record," July 25, 1885); another patient, while pregnant, suffered from digital neuralgia, and in a third case reported by myself, a patient of Dr. Nilsen's, suffering from ovarian prolapse, had severe and continuous neuralgic pains in the wrist. Studies of the cause of reflex pains in the feet show that they may be referred in almost all cases to irritation of the genito-urinary tract, and occur more often in the male ("Med. Record," July 25, 1885). The pains of uterine disorder, when reflected down, appear rarely to go below the knee; in other words, they affect the lower branches of the lumbar plexus, and not the sacral nerves.

It has been stated that pain in the heels may be caused by ovarian abscess. In my experience, such pains are due to lithæmic and neurasthenic conditions, and will be relieved by remedies addressed to such states. It may be said in general, then, that pelvic irritations are felt most frequently in the upper and short branches of the lumbar plexus, next perhaps in the intercostal nerves and upper cervical nerves, then in the trigeminus, and last in the hands and feet.

Lesions in the lung itself cause reflex pains in the form of intercostal neuralgia. Slight pulmonary congestions, such as occur at the very onset of phthisis, may cause intercostal neuralgia, and Anstie speaks of the value of these pains as warnings of the approach of



Anæmic headache.—Brunton.



	Strands of cerebro-spinal nerves.	Distribution.	Associated ganglia of sympathetic.	Main distribution.
Area I.....	Trigeminus, facial, etc.	Face and its orifices, anterior scalp.	4 cerebral.	Head.
Area II.....	Upper 4 cervical.	Occipital region, neck.	1st cervical.	Head (slightly to heart).
Area III.....	Lower 4 cervical and 1st dorsal.	Upper extremities.	2d and 3d cervical, 1st dorsal.	Heart.
Area IV.....	Upper 6 dorsal.	Thoracic wall.	1st to 6th dorsal.	Lungs.
Area V.....	Lower 6 dorsal except last.	Abdominal wall, upper lumbar, upper lateral thigh surface.	5th to 12th dorsal.	Abdominal viscera, testes, ovary, fundus uteri <i>via</i> renal plexus.
Area VI.....	12th dorsal, 4 lumbar.	Lumbar region, upper gluteal, anterior and inner thigh and knee.	1st to 4th lumbar.	Pelvic organs.
Area VII.....	5th lumbar and 5 sacral.	Lower gluteal, posterior thigh, leg.	1st to 5th sacral.	To pelvic organs, the sympathetic supply being small.

Diagram showing the distribution of the seven cerebro-spinal strands of nerves, and the location of transferred pains and neuralgia.

phthisical disease. Apart from these neuralgias, the lung is very rarely an excitant of reflex pains, perhaps because its nerve-supply is small, aside from the sensory fibers of the vagus. Further study, however, may show

that lung irritation may cause some of the painful affections of the larynx, tongue, or throat.

The question now arises whether, with these various facts before us, any general statements can be made

with regard to the production of transferred pains. If we study them in connection with the anatomical arrangements of the cerebro-spinal and so-called sympathetic system, it is possible that the diffusion and transference of pain, though in a "mighty maze," will not appear entirely without a plan.

The cerebro-spinal nerves are sent out from their centers in divisions or companies of seven, and each company acts together and serves a common definite physiological purpose. These divisions are :

1. The ocular motor nerves, the trifacial, and the seventh—which supply motion and feeling to the face and anterior scalp. The remaining cranial nerves supply internal parts.

2. The four upper cervical nerves forming the cervical plexus. This leash of nerves supplies motion and sensation to the neck and occiput, and controls the movements of the cephalic extremity. It is in close connection with the trifacial, both at its origin and periphery, both directly and *via* the sympathetic. It is subjected to much the same disturbances, and may be looked upon as physiologically almost a part of the first set—*i. e.*, of the common sensori-motor cranial nerves.

3. The third leash of nerves is composed of the last four cervical and first dorsal. They form the brachial plexus, and furnish motion and sensation to the upper extremities.

4. The fourth set includes the dorsal nerves from the second to the sixth. This supplies the chest-wall, including the pleura, and with the sympathetic the lungs beneath.

5. The fifth set consists of the lower seventh to eleventh intercostals, which supply motion and sensation to the abdominal walls, to the lower dorsal muscles, and the skin over them.

6. The sixth set consists of the first four lumbar nerves with part of the twelfth dorsal, which is really a lumbar nerve. This supplies motion and sensation to, in general words, the hip-girdle—*i. e.*, the muscles (erector spinæ, etc.) of the loins, those of the anterior, inner, and outer portion of the thigh, and the skin over these regions, extending down to the upper half of the buttock and to the groin, scrotum, and labia. It is the lumbar plexus which furnishes most of this supply.

7. The seventh and last set consists of the sacral nerves, whose anterior branches (those of the first four, with the lumbo-sacral cord) form the sacral plexus. This supplies the external genitals of the male, the clitoris and part of the vagina, the perinæum and external sphincter and the lower buttocks, and the posterior part of the thigh and leg, except its inner side. In a general way we may state that the lower portion gives motion and sensation to the legs and posterior thigh (the sciatic) ; the upper portion to the genitals and the gluteal, perineal, and anal region (sup. gluteal, small sciatic, pudic).*

Now each of these seven sets of nerves is in intimate connection by two branches with the sympathetic ganglia, and through these with the viscera of the different

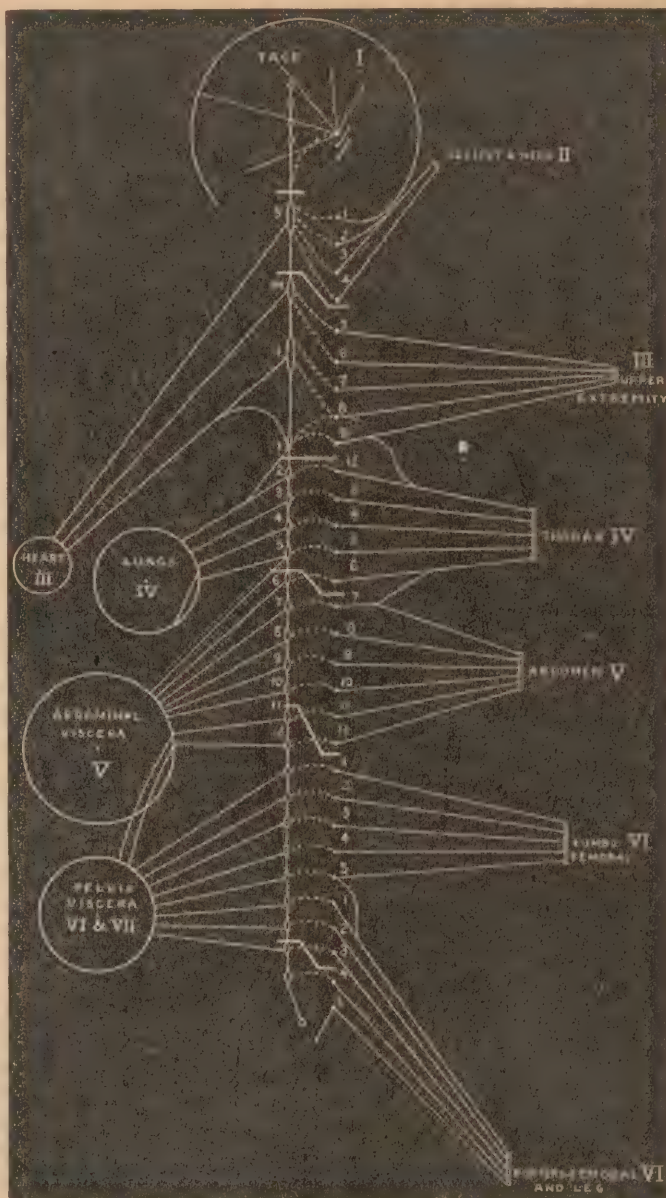


Chart showing the different levels of the cerebro-spinal and sympathetic nerve-supply. Cerebro-spinal nerves represented on the right side ; sympathetic nerves on the left side.

cavities.* The accompanying diagram shows better than any description what this relation is.

cept a portion of the legs, are supplied by lateral branches of the spinal nerves ; the back, from occiput to iliac crest, by dorsal branches.

* Gaskell's recent studies of the visceral nerves show what I have taught for several years to my classes—*viz.*, that the sympathetic nervous system is in reality only an outflow from the cerebro-spinal. He also maintains that it is made up of fibers of a peculiarly small size which pass out through the roots to the viscera. The outflow of these visceral or sympathetic nerves takes place in the upper cervical region, *via* the glossopharyngeal and vagus ; in the dorsal region, from the second dorsal to the second lumbar in the dog ; in the sacral region, *via* the second and third sacral nerves. Gaskell's investigations so far

* The sides of the body and both upper and lower extremities, ex-

I. The first two leashes of nerves are connected most intimately with the four cerebral sympathetic ganglia (ophthalmic, otic, submaxillary, sphenopalatine) and with the upper cervical ganglion.

We can understand how irritations in the cranial cavity may be reflected almost indifferently upon the trigeminal or upper cervical nerves.

II. The third leash of nerves to the upper extremity is connected with the three cervical and first intercostal ganglia, all of which go to make up the cardiac nerves.

Hence irritations of the heart are reflected so often in the shoulder and down the arm.

III. *The first six* nerves of the thoracic wall are connected with the corresponding sympathetic ganglia which supply the lung tissue, and this anatomical fact may explain why in slight pulmonary congestions pain may be referred to the intercostal nerves.

IV. The fifth leash of nerves, fifth to the eleventh intercostal, is connected with the sympathetic ganglia, which supply nerves to the abdominal viscera *via* the splanchnic nerves. The great splanchnic supplies all the abdominal viscera, including the visceral serous membranes, except the kidneys. These are more largely supplied by the small splanchnic which arises from the eleventh and twelfth thoracic ganglia. The renal plexus in turn sends branches to the spermatic cord, testes, ovary, and fundus uteri, so that those parts of the pelvic organs are especially connected with the lower dorsal nerves; hence irritations of ovary, testes, cord, part of the uterus and kidneys, are often reflected as pains in the region of the kidneys and in the groins. It is, perhaps, over this are that the low-down one-sided pains so often felt over the ninth to twelfth ribs originate.

V. The lumbar strand of nerves is connected with the lumbar ganglia and *via* the aortic plexus with the descending colon, sigmoid flexure, and upper part of the rectum; through the hypogastric plexus with the pelvic organs, which it joins the sacral nerves and ganglia in supplying.

VI. The genital organs (vagina, cervix uteri, penis, prostate), except the testes and ovaries, are in close connection with the sacral strand of nerves (the seventh); the other pelvic viscera are more abundantly supplied by the lumbar and lower dorsal strands. Hence we find sciaticas and podalgia, and reflex pains throughout the lower extremity in urethral irritations, rarely in irritations of the testes, ovary, or higher parts of the pelvis. These latter cause more often lumbo-abdominal neuralgias.

In attempting to explain the reflex pains from the viscera, I am led to the belief that the pneumogastric nerve must be left out of account as a direct factor. The mass of the sympathetic nerves to the sensitive thoracic, abdominal, and pelvic viscera, are made up of white, medullated nerves that come directly from the

cord. These nerves carry sensory fibers, and their excitation is painful (Ludwig, O. Nasse).

Whether it be the heart, stomach, or uterus, therefore, irritations that excite pain more probably pass up to the brain *via* the spinal nerves, their posterior roots, and the spinal cord. Having, however, to travel through two or three sets of ganglia, it is easy to understand how they may become diffused, and travel up paths belonging to another strand of nerves, and so be referred by the mind to a place remote from their origin.

TREATMENT OF ANAL FISSURE AND HÆMORRHOIDS BY GRADUAL DILATATION.*

WITH A REPORT OF CASES.

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CLINICAL SURGERY, DETROIT, MICH.

ANAL fissure, or irritable ulcer, according to statistics, ranks third in frequency among the diseases of the rectum, is found in the infant as well as in the octogenarian, and is due principally to the passage of hardened feces through the sphincters. Although insignificant in character, it causes fully as much exquisite agony as any ill that human flesh is heir to. Very many simple fissures get well promptly, but where, by frequent mechanical irritation, they come to stay, it is then that beneficial treatment is desirable, and it is for this reason that I offer a report of a few cases treated by a method which is both simple and efficacious.

CASE I.—L. M., aged forty-one years, book-keeper by occupation, consulted me in January, 1874, for a rectal trouble which he called "piles," that had troubled him more or less for several years, and for several months had been very annoying. Lately he stated defecation was followed for several hours with excruciating pain, and at times there was considerable loss of blood while at stool. On examination, I found a marked protrusion of hæmorrhoids, and, by separating the parts exposed to view posteriorly, a fissure of the anus extending well up.

The nature of the trouble was explained to him, and the necessity of an operation for its cure. The operation proposed was forcible dilatation of the external sphincter, and ligation of the hæmorrhoids.

This he emphatically refused to have done, and asked if I could not do something in a palliative way. I accordingly directed the use of ext. belladonnæ, gr. $\frac{1}{2}$, ext. stramonii, gr. $\frac{1}{2}$, in the form of a suppository at bed-time, together with the following application to the parts: Glycerin, 3 vij, and tannic acid, 3j. After following this treatment for some time with little or no benefit, he consented to allow me to introduce my index-finger into the rectum, which I did. Next day he returned, stating that he felt better. I then, after considerable solicitation, introduced a bivalve rectal speculum, slightly separating the blades, and allowing it to remain *in situ* for about two minutes. This procedure I continued daily, gradually increasing the dilatation at each sitting until the blades were separated to their fullest extent, about two inches in diameter. My

cover only the subject of efferent nerves (probably vaso-motor) in dogs, and can not be yet applied to our present subject.

* From the "Journal" for July 30, 1887. Read before the Michigan State Medical Society, May 13, 1887.

patient continued to improve gradually until there was an entire subsidence of all previous symptoms, with a thorough healing of the fissure and an absorption of the hæmorrhoidal tumors. The constipation (which I forgot to mention) also disappeared. The entire treatment lasted about five weeks, not being employed daily, after the first week, but at intervals of every two to four days. Since that time there has been no return of the trouble.

CASE II.—T. E., aged forty-five years, merchant by occupation, first consulted me in February of 1880 for the relief of a violent pain in the rectum following the act of defecation, which had been in progress for nearly a year, and had been gradually growing worse. Inspection revealed what I suspected—a fissure on the left anal margin, together with hæmorrhoids. This patient had been the victim of obstinate constipation for many years, had tried dieting, various laxatives and cathartics, and latterly used cold water enemas every morning, without which he failed to have a daily evacuation of the bowels.

I advised forcible dilatation, but, owing to the fact that it would necessitate his keeping quiet for several days, and not wishing to be away from business, he objected. I then commenced gradual dilatation of the external sphincter every third day, until the blades of the speculum were separated to their fullest extent. I directed him to use at bed-time a suppository of iodoform and balsam of Peru, five grains each. He continued to improve after the second dilatation, and made a perfect recovery in about six weeks. The constipation was also entirely relieved. I saw this patient a short time ago, and he stated that he had been absolutely free from constipation and any rectal irritation since his last visit.

CASE III.—J. B., aged forty years, manufacturer, came to me in September, 1883, having had rectal symptoms for over a year, and having suffered from constipation for a much longer period. I discovered on examination a fissure with several hæmorrhoidal tumors. As he was unwilling to submit to forcible dilatation, I resorted to gradual dilatation, as in the preceding cases, and after two months of rather irregular treatment he was pronounced cured. Since which time he has had no recurrence of the trouble.

CASE IV.—Mrs. K., aged thirty-five, a large, fleshy woman, consulted me July 7, 1884, for treatment of "piles," as she termed the difficulty. She informed me that ten years previous she had been operated upon for the removal of several hæmorrhoidal tumors by ligature. On examination, I found two or three small hæmorrhoids, and posteriorly a good-sized fissure. About a year previous to the time she sent for me she experienced some pain at stool, which gradually increased so that she was compelled to resort to morphine for relief. She had been treated by two or three physicians by the application of ointments and internal medication without benefit. My first treatment consisted of the introduction of a bivalve speculum and a slight separation of the blades, which I continued daily for about ten days, with marked improvement, each day increasing the distension. At the expiration of three weeks my patient was better of the fissure, there was an entire disappearance of the hæmorrhoids, and there has been no trouble since.

CASE V.—Major L., aged fifty, a banker, of Ontario, sent for me in October, 1885, to operate upon him for piles, from which he had been a sufferer for several years.

Examination revealed several hæmorrhoids, which he said bled freely at times; also an extensive fissure on the left side of the anus. In this case I dilated with the bivalve, and, as it was not possible for him to come to Detroit at once for continuance of treatment, I directed that until he could do that he first introduce one finger (anointed with tannin and glycerin), and then

another, gradually distending the sphincter. About two weeks after, he wrote me that he considered himself nearly well. I examined him about a month after I first saw him, when I found the fissure healed, and a great diminution of size of the hæmorrhoids.

These reports are taken from a record of upward of fifty cases that I have treated by this method, and are fair representatives of the character and results of the whole. I am firmly of the opinion that this treatment is equally applicable in hæmorrhoids and constipation as in the treatment of fissure, as has been illustrated in these and other cases that have come under my observation.

Monod and Verneuil both speak of a "New Treatment of Strangulated Hæmorrhoids" by forcible dilatation, Verneuil recommending it for simple piles, while Monod goes still further by forcibly dilating the sphincters while the hæmorrhoids are in a state of painful strangulation, using his fingers instead of a speculum.

Kelsey, in his recent work on "Diseases of the Rectum and Anus," in speaking of the treatment of hæmorrhoids by ligature, says that "the sphincter should be carefully dilated first, and this is a step of great practical importance, as the securing of complete paralysis of the muscle will do more than anything else to prevent pain and spasm after the operation. Where this is omitted as unnecessary by the surgeon, I have observed a week of great suffering to the patient follow the omission." He, however, does not speak of this as a treatment for hæmorrhoids. Allingham mentions forcible dilatation as one of the measures for relief of hæmorrhoids, but does not regard it as available in all cases. Gradual dilatation is not spoken of, as far as I know, by any writer, as a means of cure in these cases.

Forcible dilatation is the accepted method for the relief of fissure in ano, and in most cases gives very speedy results.

In conclusion, the treatment of anal fissure and hæmorrhoids by gradual dilatation:

1st. Is almost painless, at least after the first two or three distensions.

2d. It does not tear the parts; nor does it produce paresis, as occasionally occurs after forcible dilatation.

3d. Neither does it leave cicatrices that are apt to produce stricture, as in the method of hypodermic injection or ligature of hæmorrhoids.

33 LAFAYETTE AVENUE.

SALOL AND ICE-WATER ENEMATA

IN THE TREATMENT OF
DIARRHŒA, DYSENTERY, AND INTESTINAL INFLAMMATION.*

By A. H. GOELET, M. D.

It is alleged for salol that it passes through the stomach unchanged, and that when it reaches the small intestine it is changed into salicylic acid. Consequently

* From the "Journal" for August 6, 1887.

it has been recommended for the treatment of rheumatism and as a febrifuge of the same rank as antipyrine and antifebrine.

Taking into consideration the change which takes place in the intestines, the thought occurred to me about two months since that it would be an excellent remedy for the antiseptic treatment of bowel complaints, including typhoid fever; and, acting upon this idea, I prescribed it in the first case which came under my observation:

The patient was an adult who had had a bad diarrhœa for three days, and had been treated for thirty-six hours with bismuth, ext. pancreatis, and bicarbonate of sodium, and a milk diet, with no benefit. I ordered gr. x of salol to be taken every two hours, and made him promise to report the next morning, which he did, saying that he had come only because he had promised to do so, but he was all right and needed nothing else. The movements had ceased after the second powder, as had also the pain and wind cramps. I ordered him to take a powder an hour before his meals for two days and then report again. The diet was not restricted, except that fruit and vegetables, other than potatoes, were forbidden. He reported according to promise, and his movements had been natural and once a day only, showing no constipating effect of the medicine, a condition which is often very troublesome after the opium treatment.

Encouraged by this result, I next tried it in a case of acute indigestion or diarrhœa and vomiting in a child fifteen months old:

I ordered gr. j to be given every two hours, dry on the tongue, with a teaspoonful of water after it. The vomiting ceased immediately, and in six hours the diarrhœa had ceased. Ordered the powders to be continued every four hours. The next day the stools were natural and the powders were discontinued.

Case after case could be cited in substantiation of the correctness of this treatment, but it is sufficient to say that it is the only purely satisfactory remedy I have ever used in these cases, and I hesitate to trouble readers with a citation of so many cases so exactly similar in result, and I must devote some space to the important matter of dosage in children, which I have learned only from an extensive experience, as the remedy has never been recommended for such use before, and the adult dose only was given in the pamphlet which was issued with the introduction of the drug in this country.

While the adult dose is ten grains, the dose is much larger in proportion for children, and varies very considerably with the age. For a child six months old or under the dose is half a grain every two hours. From seven to ten months old the dose may be from one half to three quarters to one grain, according to the severity of the symptoms and the strength of the child. A child one year old may be given from a grain to a grain and a half, according to the severity of the symptoms. A child fifteen to eighteen months old may take a grain and a half to two grains. At the age of two years the dose would be two grains. For three years of age the dose would still be two grains to two grains and a half.

Children of four years would require only two and a half to three grains, and those of five to six years would require only three or three and a half grains. And from this age to ten it is seldom necessary to give more than five grains. It is always given to commence with every two hours, and as the symptoms are relieved the interval is lengthened to three or four hours. As in the first case, I sometimes give it three or four times a day for twenty-four or forty-eight hours after the subsidence of the trouble.

The application of salol in bowel complaints is very extensive. I have used it in all with the same pronounced success. In typhoid fever, every three hours, there is nothing better. While I can not say that it shortens the attack, it relieves the excessively disagreeable odor of the fæces and the tenesmus and flatulence produced by the accumulation of wind in the colon. In fact, I know of nothing which so satisfactorily relieves the accumulation of wind in the bowels in any condition.

In one case in which there was looseness of bowels with fever 100° to 100.5° F. in the morning, with an increase of one degree in the evening, with tenderness in the right iliac region and a typhoid odor to the stools, which were pale green, showing strong suspicion of typhoid fever, salol in ten-grain doses every two hours relieved the condition, and in a week the symptoms had disappeared. I believe in this case typhoid fever was aborted. I am the more willing to believe this after I have seen more of the prompt relief afforded by salol in the severe bowel trouble of genuine typhoid fever.

Intestinal inflammation of children in summer, if treated by salol to prevent putrefactive changes in the bowels, and a proper diet, need no longer be feared unless it has been allowed to exist too long before treatment is begun.

Diarrhœa and dysentery of children in summer is more promptly relieved by salol than anything else. Let me here outline a general course of treatment for these cases. To begin with, stop all food for twenty-four hours. If the little patient is thirsty, use a decoction of salep cold. This is made as follows: A salt-spoonful of powdered salep is rubbed into a paste in a cup with a tablespoonful of cold water and a pint of boiling water added slowly, stirring it all the while. This is set on the ice, and, when cold, it may be given to the child almost *ad libitum*, but in small quantities at a time. Give the salol in appropriate doses every two hours until there is marked improvement in the bowels, and apply something warm to the abdomen. In the majority of cases the little patient will be ready for food in twenty-four hours. This should then be given in small quantities at first, and it must be of the proper kind.

Milk is unreliable in hot weather because of its extreme proneness to develop the poison named by Professor Vaughan tyrotoxicon.

The same objection holds for artificial foods which require the addition of milk at that season of the year.

Most foods also contain starch, which is likewise

seriously objectionable to an infant under one year old with weak bowels. I prefer, and am in the habit of using, a malted milk food made by Horlick, of Racine, Wis., which is the same as his original food, except that in the process of manufacture milk is used instead of water; and in preparing it for use, water only is used instead of milk, as in the original food. Thus the necessity for using suspicious milk in the preparation of the food for the infant is avoided.

It is best to continue the salol for a day or two after the bowel trouble has subsided.

An important addition to our therapeutic resources is the *ice-water* enema, and it is indicated and used with advantage in all conditions of loose bowels, but it is more especially indicated where there is rectal tenesmus with bloody or slimy stools and an increased temperature. There is nothing which will so promptly relieve the little sufferer as well as the anxiety of the mother. A case in point which will illustrate the truth of this assertion is the following:

A child, seven months old, was brought to me about midday with a temperature of 103°, constant tenesmus of the bowel, with stools every half-hour, consisting of watery discharges, with slime streaked with blood toward the last. The child had been sick for three days, and had been treated with bismuth, chalk, etc., with no benefit. It was peevish and fretful, and had slept scarcely any for two days and nights. An ice-water enema of half a pint was given at once, and the child was made to retain it; and half-grain doses of salol were ordered every two hours. The mother was directed to repeat the enema at six o'clock if it was necessary, and to report the next morning.

She stated that the child had slept until after six o'clock, the first real rest it had had for two days, and that it got only one powder before that time, and had no movements; that the next morning it was all right, and ready for food.

Another case was that of a child, three years old, who had been troubled with diarrhoea all day, and had received no treatment, when, at six o'clock, the mother, becoming alarmed by the frequency and offensive odor of the stools and the pain the child complained of, sought advice. To her horror, I gave an enema of ice-water, which instantly relieved the little sufferer, and established it with favor in the eyes of the mother; salol, in two-grain doses, was all that was needed afterward.

It is always best, for the moral effect upon the attendants, to add something to the enema, and let them believe at first it is that and not the water which produces the effect. They will then the more willingly submit to the use of the remedy; and at the same time I believe it is best, where there is an offensive odor to the stools, to use some antiseptic, such as hydronaphthol or salicylate of sodium, in small quantity. Carbolic acid would be objectionable on account of its poisonous effect in quantity large enough to be of use, and because its odor would betray its presence.

The manner of giving the enema is important, as it is desired to have it retained as long as possible, and this is sometimes difficult to accomplish in young children unless one understands it thoroughly. It is best for the physician himself to give the enema, at any rate,

the first, and, unless he is willing to do this, he need not look for success.

An ordinary Davidson syringe may be used very slowly, but the fountain-syringe is preferable, raised only just high enough to have the water flow in slowly, and at intervals the stream should be checked for a while by pressure upon the tubing.

By proceeding in this way, and holding the buttocks together firmly with a towel over the hand, which at the same time holds the nozzle in the rectum, the child can be made to receive and retain a considerable quantity, if the recumbent position is insisted upon for a few moments after.

Let any one who doubts the value of these two remedies try them for himself, and I feel fully satisfied that he will be grateful for the hints he received from this slight contribution.

THE USES AND EFFECTS OF OXYGEN GAS AND NUX VOMICA IN THE TREATMENT OF PNEUMONIA.*

By GEORGE E. HOLTZAPPLE, M. D.,

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MEDICAL literature does not inform us of much advancement having been made in the treatment of pneumonia for some years. I think there are certain agents which, from their physiological effects, should have a place in the armamentarium of this disease. I refer to the use of oxygen gas and nux vomica.

Studying closely the physiological effects of each, and the pathological conditions and clinical phenomena of pneumonia, it seems to me there are stages in this disease when at times both agents are indicated and must be of decided value. The first is necessary to hæmatosis; the second is indicated from its physiological effects upon the respiratory and circulatory apparatus. It is one of the deep respiratory stimulants (A. A. Smith). These effects upon respiration and circulation have been produced repeatedly by administering strychnine or nux vomica.

Clinically, strychnine has been observed to stimulate respiration. If a dose not sufficient to tetanize is administered, it increases the depth and energy of the respirations. It antagonizes respiratory poisons and those morbid conditions of the system which depress the respiratory function. These physiological effects given to us by authorities I have repeatedly reproduced during the last two years. "The same dose mentioned above will also stimulate the cardiac ganglia, the pneumogastric, the accelerator nerves of the heart, the vaso-motor center in the medulla, and the vaso-motor functions generally" (Bartholow). Larger doses will paralyze the very structures that full doses will stimulate. There are stages in this disease when life depends upon stimulating the very structures which I have so far enu-

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merated. The difference of effect depends on the dose administered. It is a powerful remedy and has to be administered with care. Yet, if only half enough is administered and no favorable effects are produced, or if entirely too much is administered and unfavorable effects are produced, it is not the fault of the remedy, but of the one who administered it. According to some observers, strychnine diminishes the amount of carbonic acid formed in the blood.

I am not aware that strychnine or nux vomica was ever administered in acute disease with a view of obtaining the useful effects on the circulation and respiration above enumerated, and the stimulant effects upon the functions generally which must then result.

When hepatization is extensive, the patient craves for oxygen. He may even do so when hepatization is less extensive if accompanied by acute bronchitis with profuse secretion.

I have observed this association in a number of cases during an epidemic of influenza. The patient then receiving an insufficient supply of oxygen from ordinary atmospheric air, suffers the effects of unaërated blood. It is only by understanding thoroughly the physiological effects of an insufficient supply of oxygen that we can comprehend intelligently the usefulness of the same, and it is upon this basis that I advocate a further trial of this agent wherever it may be deficient.

Allow me, then, to call your attention briefly to the physiological effects of a deficient supply of oxygen. This condition gives rise to the phenomena of asphyxia. Asphyxia may be slow or rapid. It may occur in disease or in health, when for some reason a normal supply of oxygen is not obtained. Diminution of oxygen causes the respiratory movements to become deeper and more frequent. Both the inspiratory and expiratory movements become exaggerated, more muscles are called into action, and, as the blood becomes more venous, all the muscles which can assist respiration are called into activity. The expiratory movements now become more marked than the inspiratory, and soon all the muscles of the body are thrown into a convulsive struggle of variable duration; the expiratory movement becoming more and more marked, this stage of asphyxia finally terminating in an expiratory convulsion.

Physiologists teach us that these characteristic convulsions of asphyxia are caused by the stimulating action of the venous blood upon the respiratory center in the medulla oblongata. Because these convulsions fail to occur when the cord is divided below the medulla, and because they do occur when all the other portions of the brain above the medulla are removed, it is said to be evident that the medulla is the agency through which they are produced. Some physiologists speak of a convulsive center, but admit that if such exists it must be closely connected with the normal expiratory division of the respiratory center. By suddenly obstructing the flow of arterial blood to the medulla, similar convulsions may be produced. In such an experiment we may observe the stage of dyspnoea followed

rapidly by the convulsions of asphyxia, all as the consequence of the respiratory center becoming exhausted for the want of oxygen.

Anæmic convulsions from sudden large hæmorrhages may sometimes be observed, again produced by stimulation of the respiratory center or the convulsive center, if such exists. During the spasmodic stage of asphyxia the nervous system rapidly becomes exhausted, from the violent convulsions and the continued stimulation of the nerve-centers from a lack of oxygen. Following this period of convulsions is one of calm, denoting exhaustion. This period of exhaustion may sometimes be plainly observed in slow asphyxia, such as results commonly from disease, and this must not be mistaken for an amelioration of the distressing phenomena of asphyxia. This condition should, however, never be mistaken. In it the pupils are greatly dilated, unaffected by light; no reflex movements of the lids are produced by touching the cornea—in fact, no reflex movements anywhere can be produced by stimulation of the surface of the body. The muscles are relaxed and quiet. The respiratory pause becomes longer. The respiratory movements which follow now resemble those of normal quiet breathing, and, as far as muscular action is concerned, chiefly inspiratory. For this reason an observer may be mistaken as to the existing condition of a patient by careless examination.

Let us study the physiological effects of a deficient supply of oxygen on the circulation again, with a view of learning the importance of administering it when deficient. As the blood becomes more venous, it stimulates the general vaso-motor center, causing a constriction of all the small arteries of the body, with increased arterial tension, and, as a consequence, the filling of the systemic veins. The peripheral resistance becomes increased. This indirectly stimulates the contractions of the heart, but, on the other hand, is a direct obstacle to the heart in propelling its contents. The heart at the same time beats less frequently, and becomes weaker from the stimulation of the venous blood upon the cardio-inhibitory center in the medulla, and from the inhibitory action of the venous blood upon the heart itself. The stimulating effect of the venous blood upon the respiratory center causes increased respiratory movements. These favor the flow of venous blood to the heart, which, in consequence, becomes more and more distended. As the blood flowing through the coronary arteries becomes more venous, the contractions of the heart become more and more feeble; at first the energy may perhaps be increased, but soon the heart beats less frequently and with much less force. This I have observed more than once. These phenomena result from an insufficient supply of oxygen in disease or in health. From the infrequency and feebleness of the heart's action the blood accumulates in the heart, lungs, and great veins. The heart is in danger of paralysis from overdistension, all as the result of a lack of oxygen.

Observe, then, the conditions which favor the accu-

mulation of blood in the heart. When the supply of oxygen is abnormally diminished, the peripheral resistance is increased. The heart-beats are more infrequent, and at the same time weaker than normal. The respiratory movements are greatly increased, favoring a larger flow of venous blood to the heart in its feeble condition. Under these circumstances the heart, while beating with diminished frequency and vigor, should beat with increased frequency and vigor for a threefold reason—namely, to overcome the increased resistance in front, to expel the blood as fast as it enters the heart, and to overcome the slight obstruction to the passage of the venous blood through the lungs.

This disturbance all results simply from an insufficient supply of oxygen. The excitability of both nervous and muscular tissue depends on a constant and large supply of oxygen. In pneumonia there are other reasons why the heart should be strong in addition to those enumerated. During the stage of hepatization the blood is compelled to circulate through a smaller system of pulmonic vessels, necessitating strong contractions of the right ventricle. Fatty degeneration and absorption of the inflammatory products are favored by a free pulmonic circulation.

Hyperinosis is a condition of the blood marked in pneumonia, favoring ante-mortem thrombosis, which is more likely to result the weaker the contractions of the heart. The heart is also weakened from acute parenchymatous degeneration in a severe case of pneumonia. The weakness of the heart, then, in this stage of pneumonia is, to a certain degree, the physiological result of an insufficient supply of oxygen. I do not mean to speak of oxygen as a curative agent, but it will ameliorate some of the most distressing phenomena in a serious case of pneumonia when cyanosis is marked. It will, in this stage and form of the disease, be as conducive to relief as bread in time of hunger and water in time of thirst, and upon an equally rational basis. The system in either case craves for elements or compounds that it imperatively demands before relief can be obtained. We can assist nature considerably in relieving these distressing phenomena. When hæmatosis is very imperfect, we can administer oxygen just as well as expectorants to favor expectoration.

Oxygen, just like nutritives and stimulants, if administered too late, is equally without effect. I do not mean to speak of the necessity of oxygen in all cases of pneumonia; only in those where there is cyanosis. If any one element is more important than another in the maintenance of the functions of the body, it is oxygen. In pneumonia we try to secure relief for our patient. We assist nature so that the patient may endure the effects of the disease till nature no more needs our assistance. We try by internal remedies and external applications to reduce the temperature as near to the normal as possible. We administer nutritives and stimulants to maintain strength. We watch the functions of the different organs, and when they are deranged attempt to rectify them. But, when hæmatosis is very imperfect,

we do not think of administering oxygen, and yet it alone can give relief; how inconsistent!

Oxygen is not indicated to relieve exhaustion unless it is the result of imperfect hæmatosis. Stimulants are not indicated for the relief of cyanosis unless associated with exhaustion. Each has its place and its office to perform. Great restlessness and anxiety may, perhaps, sometimes be observed which can not be attributed to exhaustion or cyanosis, but probably due to a virulent specific cause, such as the pneumonia-coccus, and in such a condition neither oxygen, stimulants, nor sedatives would give relief.

Pure oxygen is not irritating to the air-passages. If the blood or hæmoglobin becomes saturated with oxygen, the condition called apnœa will be produced. Could this be produced, I do not think it would be at all desirable. The respiratory movements facilitate the exhalation of carbonic acid. Were the respiratory movements to cease, the tension of carbonic acid in the air-cells would be more likely to approach that of the venous blood, and, as a consequence, favor carbonic-acid poisoning.

In the beginning of the winter of 1885 I was called to attend a severe case of lobar pneumonia. The patient suffered greatly from cyanosis, and died suddenly on the morning of the sixth day of sickness.

No oxygen was here administered. The next severe case that I was called to attend was on March 6, 1885.

The patient was a young man, aged about sixteen, robust, temperature about 104° F., pulse frequent in proportion, severe pain in the side, dyspnœa, and rusty sputa at my first visit. Hepatization rapidly developed, dyspnœa became very marked, and cyanosis likewise on the sixth day of sickness. Being disgusted with the treatment recommended and applied in the case above mentioned, my patient begging me to relieve him from his labored respiration, as he was breathing then from 75 to 80 times a minute, I resolved to administer the very element he craved. In a few minutes after administering oxygen, cyanosis became less, the patient expressed himself as somewhat relieved, and in twenty minutes his respirations were reduced from 75 to 60 in a minute. The effects on the respiration and his color were distinctly appreciated by the parents and those around the bedside of the young man. I repeated the administration a number of times during that day until it was no longer needed. The patient recovered rapidly.

The next very severe case was that of a young lady, aged about fifteen, also robust; cerebral symptoms were very marked; the diagnosis was not decided for about two days. Solidification of the greater part of both lower lobes then became distinct, with a co-existing acute catarrhal condition of the whole mucous membrane lining the respiratory passages. Bronchial secretion was profuse. The pulse was frequent and the temperature was high from the beginning of the attack. The respirations became more and more frequent until the seventh day of sickness, when they numbered 80 and above to the minute.

On the seventh day of sickness cyanosis became alarming, and my patient was sinking fast. She begged for breath. I administered oxygen. It diminished the cyanosis remarkably. The respirations became much less labored and less frequent. This treatment I began on the seventh day of sickness. I continued the administration every three or four hours, with favorable effects, until noon of the ninth day of sickness. After this

time it was without effect, and so was everything else that was administered. The patient died toward evening of the ninth day. Absorption evidently had in no way commenced.

I conscientiously believe that the patient in this case would have died forty-eight hours sooner had oxygen not been administered. I am confident that life and vitality were prolonged, thus allowing so much more time for absorption to take place. These are the only cases in which I have administered it with care.

To say that you are not prepared to administer it is no excuse when death is imminent, for every physician is as well prepared as I was, or soon can be at little expense.

I generated oxygen from chlorate of potassium and black oxide of manganese, in large test-tubes heated over a spirit-lamp, and with rubber tubing I conducted the gas to the bottom of a deep bucket filled with water, which I had placed to the side of the patient's head. Then with a fan the gas bubbling out of the water was wafted to the patient's face. This plan of generating and administering oxygen you may consider crude, and so do I; but I simply mention it to show what may be done in an emergency. It is the principle of a certain mode of treatment that I mean to advocate in my paper, and not the details. When I administered it about two years and a half ago I was not aware that oxygen had ever been administered in any form of pneumonia, only in diseases of the upper air-passages producing obstruction to the entrance of air into the lungs. During the last year a few cases of lobular pneumonia have been reported in which it was administered with good effects. I administered it in lobar pneumonia.

The use of oxygen in pneumonia is, however, nothing new to many members of the profession. Professor E. G. Janeway reported on the good effects of oxygen in pneumonia at the meeting of the New York State Medical Association in 1885. It is also much used in Bellevue and other hospitals. I am inclined to think, however, that the average country practitioner has very little medical literature that refers to the use of oxygen in pneumonia, which was one reason for writing this article. I advocate the use of oxygen not only in pneumonia, but wherever it is deficient unless for special reasons contra-indicated.

Whooping-cough, even if not complicated by pneumonia, might theoretically be benefited in relieving the venous stagnation. In many of those diseases which terminate fatally by apnoea, according to some writers, or slow asphyxia, it might be administered, at least upon theoretical grounds.

Nux vomica I have administered in a number of cases where it was physiologically indicated. The effects were favorable when the dose was sufficient. This remedy is applicable not only in pneumonia, but often when from other causes the heart becomes feeble and irregular, the arterial pressure very much diminished, and at the same time the respiratory movements feeble and irregular. This condition often results from the effects of high temperature and severe acute constitu-

tional disturbance. This remedy has to be handled with care, and the initiatory dose should be small, then increased till the physiological effects desired are produced.

ON CERTAIN MEASURES FOR THE RELIEF OF CONGESTIVE HEADACHES.*

By WILLIAM C. GLASGOW, M. D.,

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ONE of the most prominent, and at times the most distressing, symptoms of congestion of the nasal chambers and sinuses is the pain and the sense of constriction of the forehead experienced during the attack, lasting in the acute cases for a few hours; in the more chronic forms it may remain for days, or even weeks. In some cases there is a periodical return, after a longer or shorter interval, the life of the sufferer is rendered almost intolerable, and he is unfitted for any mental or physical activity. If we analyze this pain, we shall find that it is distinctly of two kinds. The one kind gives a dull, heavy sense of fullness, with occasional throbbing over the temple. The other is the sharp, lancinating pain so generally recognized as neuralgia.

At times both varieties of pain are present in the same case; in others they are entirely distinct. In the one case we recognize a fullness or local increase of the tension of the vessels; in the other a distinctly disordered nerve action. Both varieties are often due to the same pathological condition of the nasal chambers, and the relief of the one is often followed by a cessation of the other. I do not, however, in this paper propose to consider the nasal reflexes which are now attracting so much attention, and which are distinctly neuralgic in character, but the pain and sense of constriction arising from an over-distension of the vessels.

This disturbing cause is seen in the frontal headache, browache, or so-called catarrhal headache, radiating from the root of the nose; it may be limited to the forehead; it may be felt as a dull, throbbing pain in the temples; it may give rise to intense dull ocular pain, or, extending over the head, it may be felt in the occipital region, occurring frequently from cold or exposure; we also find it often conjoined with certain vaso-motor disturbances of the mucous membrane. It is frequent at the menstrual epoch, coincident with a turgescence of the cavernous bodies, and it is the cause of many of the so-called nervous headaches, or uterine headaches, with which a similar condition of the cavernous bodies will be found. If we examine the nasal chamber during the attack of congestive headache, we shall find the cavernous bodies in a state of tension; they may not be greatly swollen or enlarged, but to the eye the condition of the mucous membrane is that of tension and fullness. The degree of tension corresponds in a measure with the severity of the headache.

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A few years ago I treated these cases with hot alkaline sprays, gently applied, and the use of hot fomentations, combined with the use of the usual constitutional remedies. This mode of treatment has not been altogether satisfactory, and during the past four years I have substituted for it the local abstraction of blood, for which I can allege unqualified success. In many cases there is experienced an immediate relief of the pain, and in all there is a sense of the loosening of the constriction. A simple bleeding may relieve the headache, or it may have to be repeated in a day, a week, or a month. I have seen but few cases which were not permanently relieved by a bleeding repeated from two to six times.

To produce the bleeding no cut is required. The cavernous body is simply pricked, and the blood flows freely until the excessive tension has been reduced; then it ceases. The amount of blood drawn rarely exceeds one ounce, in many cases it is less than this, and in some cases a single drachm of blood removed will give the requisite relief. In cases of excessive congestion the flow will equal several ounces before it ceases, the quantity of blood being dependent on the distension of the vessels, and this corresponds with the severity of the symptoms. From a normal membrane, or where there is no excessive vascular distension, scarcely a drop of blood will flow from a simple puncture of the membrane such as would produce a free flow in this pathological condition. In cases where the mucous membrane is thickened, a sharper puncture will be necessary to bring blood. A lance-headed probe may be best used in making the puncture, although a sharp-pointed bistoury, or any pointed instrument, will answer. The probe has the advantage that it does not excite the apprehension of the patients, many of whom become nervous at the sight of a knife, and dread the idea of being cut.

The following are given as types of the cases relieved by this method of treatment, and I feel assured that relief would not have been so prompt under any other mode of treatment:

CASE I.—Miss M. F., a nurse, has had persistent headaches for more than a year. They would recur every few weeks, and the attack would continue several days. February, 1886, half an ounce of blood was removed, and this was repeated four times at intervals of ten days. At the last operation the flow consisted only of a few drops; since then she has been entirely free from headaches of this character.

CASE II.—T. R., a merchant, has had attacks of intense frontal pain and constriction, accompanied by orbital and supra-orbital neuralgia, for the past eight years. The distress was so great that he was compelled to remain in bed during the paroxysm, which would usually last four days. As a rule, the paroxysm would occur every three or four weeks. He had tried all manner of drugs and many physicians, but had obtained no permanent relief. The paroxysms occurred more frequently in winter than at the other seasons. Local depletion was practiced during the summer and autumn of 1885 on the commencement of the paroxysms; relief of the throbbing pain and the tightness of the head was always immediate, the neuralgic pains

continuing a few hours and then disappearing. During the past winter and spring he has had but one attack, and this promptly subsided after a single bleeding.

CASE III.—Dr. B., a prominent and most intelligent physician of a neighboring town, has for many years been a martyr to congestive headaches and neuralgia. He has suffered so much that he is greatly broken in health and has found great difficulty in continuing his practice. His pains were frontal, with throbbing in the temples, and a dull, heavy aching pain at the occiput. These were frequently combined with severe orbital and supra-orbital neuralgia. When the attack came on he was compelled to give up his duties and to remain in bed; the paroxysm lasted for three to five days. Dr. B. was bled some ten times during the autumn and early winter. Since then he has been entirely free from his headaches and neuralgia, although he has suffered with laryngitis, and he has had a severe attack of bronchitis and rheumatism. This last illness was brought on by exposure during a long night ride in the country, and he states that it would, in former years, have certainly brought on his headache and neuralgia.

CASE IV.—Miss L. E. has had, as a rule, at the menstrual epoch, a severe frontal pain with constriction. The flow is excessive and lasts usually five or six days. She called on me in January of this year, complaining of an intense headache. A local bleeding, which was repeated the next day, entirely relieved the head, and she stated the flow was less than it had been for many months. The next menstrual period passed without a headache, and she reports that they have been absent to the present date.

CASE V.—Miss S. G., a sufferer with sick-headaches. A local bleeding during the paroxysm gave quicker and greater relief than had ever been attained by the use of numerous remedies which had been tried.

CASE VI.—G. W., a merchant, a sufferer from hay-fever, came to my office during a paroxysm with a most intense sense of constriction of the head and a blinding headache. His face was swollen, with congested eyes and lacrymation. He presented, on the whole, a most perfect picture of the misery of a congestive headache and the congestive stage of hay-fever. The puncture of the cavernous body allowed the blood to gush out, and the flow continued until some three ounces had passed. Relief of constriction was immediate, the pain was greatly lessened, and the next day he was able to return to his business.

In bringing this remedy for the relief of congestive headaches before you, I may be recommending what some of you have already practiced. Now, if this should be the case, I think the practice is of such value that an emphatic indorsement is justifiable. Our forefathers undoubtedly made use of it, perhaps not in this manner, but certainly they had the same idea when leeches were applied to the temples or to the nape of the neck. A somewhat similar practice was recently related to me by an old Southern planter, who told me that in the days of slavery, whenever a slave complained of a headache, he would run his penknife into the tip of his nose and the headache would be relieved.

SUPPORT IN THE TREATMENT OF OVARIES AND TUBES.*

By SARAH E. POST, M. D.,

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A few weeks ago there came to the Demilt Dispensary a large, finely formed German woman, twenty-eight years of age, married, and the mother of two children. She complained of pelvic pain, and in the course of the usual routine questions I asked her when she had last menstruated. She replied: "I had an operation in ——— Hospital two years ago, and I have never had my blood since." Then she broke out in a despairing cry: "I did not know that I would have no more children, and that I would never more have my blood." Trying to defend the absent, I suggested that she had had a good deal of pain before the operation, that she had been relieved of this, etc. She turned quite fiercely upon me. "What is pain?" said she; "I might better have children, though I die."

This case requires no comment. Examination showed the atrophied uterus and the atrophied, contracted vaginal vault of old age. One immediately felt sorry for her. As she had suggested, too, a good deal of parametrial tenderness was present. It may be urged that this woman had already been sterilized previous to the operation by her disease. While this might have been true, no one could positively have stated it as a fact. The hope of maternity remained, and she was protected from the scorn which her husband subsequently heaped upon her. The sterile wife seldom escapes unhappiness. I have under treatment one threatened with desertion unless she soon bears a child. Besides the protection given by the hope of maternity, this woman had, too, the comfort of her menstrual flow. The stature of the woman seems to be dwarfed in order that she may have material to give away. To keep her system in order, to feel well, she must sustain her periodic loss. Contrary to Mr. Tait's experience, women, as a rule, dread the menopause, and may resort to electric treatment and other arts in order to keep it away. The accumulation of fat after the menopause, and earlier in women who menstruate scantily, also points to this surplus of nutritive force. The longer life of woman, and her superior endurance of loss of blood, cold, and fatigue, too, might be cited. A gifted, cultivated woman said to me once: "To flow freely is my idea of bliss." She was highly plethoric, and her menstruation lasted but a day. To deprive the woman of menstrual ability by operation is almost as serious a matter as the sterility counted its most important result. Mutilating operations, such as the removal of ovaries and tubes, can scarcely be justified except for conditions which endanger life. It can certainly be said that conservative treatment merits serious thought. But little has been done for the uterine appendages in this direction. The "Index Medicus" each month has a long list of communications upon diseases of the uterus, and another

upon displacements of the uterus, but upon displacements of the uterine appendages it has nothing at all, communications upon the pathology and the displacements of these organs being so infrequent as to be included under the heading of their excision. The meagerness of the recommendations given in text-books is known to all. In regard to chronic oophoritis Dr. Thomas says: "The day will probably come when our treatment will be satisfactory and effective, but it has not yet done so, by any means." Dr. Edis says: "Chronic oophoritis is a very intractable malady." Mr. Tait says: "I assert that it is absolutely incurable in by far the greater number of cases."

On the other hand, the support and protection of diseased parts is a cardinal principle of surgical procedure. Applied to hyperæsthetic, congested, and inflamed ovaries, it relieves suffering and favors cure. The beneficial influence of pregnancy in this condition is admitted by all. Absence of the periodic menstrual congestion is given as its explanation; but is this reasoning defensible? Women with chronic oophoritis are commonly more comfortable when menstruating than at any other time. During pregnancy there may be absence of periodic congestion, but in its place there is persistent hyperæmia with absence of periodic relief. The development of the corpus luteum of pregnancy can be accounted for only by increased nutritive activity and increased blood-supply. If, then, the ovary is not quiescent, but partakes largely of the increased vascularity of the uterus during pregnancy, and if, in addition, it loses the advantage of the menstrual discharge, how does it gain during this period? Manifestly by a change in position. During the early months, when the ovaries are pressed upon by the enlarging uterus, the woman commonly suffers from nausea and an aggravation of pelvic pain. She experiences the relief of her condition only later, when, rising out of the pelvis, the uterus carries the ovaries with it, and relieves them from their bony environment. If elevated artificially, the same relief can be obtained in the non-pregnant state.

Methods of obtaining Support.—In Dr. Parvin's edition of Professor Winckel's work a suitable pessary is recommended, but, while ninety-seven pages are given to dislocations of the uterus, the pessary suitable for the support of ovaries is not described. Dr. Thomas also says that where diseased ovaries are prolapsed, they should be supported upon a pessary; but he, also, does not particularize in regard to it. Dr. C. H. May, in his admirable compend, states that Thomas's bulb pessary, Emmet's, Noeggerath's, and others may be used. Mr. Tait has a wedge pessary, or one with a broad posterior bar. To use an old simile, one might as well try to poise a piece of ice on the finger-tips as to try to hold up an ovary with one of these hard-rubber rings. Support is not a failure because unobtainable by such means. The dispensary connected with the Woman's College has an attendance of from thirty to fifty gynecological patients daily. Among these cases there are many of

* From the "Journal" for September 24, 1887.

ovarian displacement, hyperæsthesia, and actual disease. Such cases are not there, however, considered less hopeful nor more difficult to handle than others; and for many years support has been the routine treatment, the cotton tampon being used. This is commonly applied in the knee-chest position. Personally I prefer the Sims position, and I use three or four small pads instead of one larger one. With the Sims speculum retracting the perinæum, I carry in the first, using the finger instead of the dressing forceps for this purpose. Then, with the finger retaining the pad, I withdraw the speculum, assure myself that the pad is well up in place, re-introduce the blade in front of it, and pass in another to one side or the other, as required. Having packed all into a secure position, I last place one in front and against the pubes to give leverage and support. Where the ovary is not adherent, immediate relief is, as a rule, obtained. Recently, in a case of this kind, after the application of the tampon, I asked: "Do you still feel pain?" "A little," the patient replied. Placing her again upon the table, it was found that the painful ovary had not been completely held up, and another pledget of cotton, passed along the side of the others so as to lift it, gave relief. Such a tampon will stay in place twenty-four hours. After some weeks the tenderness commonly diminishes, and the pain during the intervals is not so great. Finally, at the end of some months, the treatment can be suspended. Operation upon a fissured cervix often hastens the cure.

As a further means of support for ovaries I have recently used the old inflated ring pessary ("Med. Record," Jan. 15, 1887). In my previous paper I stated some objections to this pessary as manufactured here. Accidentally, or with intention, the central aperture is made smaller as the total diameter is increased. In Nos. 1 and 2 there is a hole which easily accommodates the cervix. In Nos. 3 and 4 it is smaller, but not so diminished as to afford a serious obstacle to use. In Nos. 5 to 7, on the contrary, the hole is absurdly small. Professor Winkel makes a similar complaint of this pessary in Dr. Parvin's edition of his book. I am pleased to announce that Stohlmann, Pfarre, & Co., of East Twenty-eighth Street, have modified these larger sizes according to my suggestion.

It is now one year since the paper referred to was written, and two years since I commenced using this ring. Additional experience but confirms my belief in its value. In the case of the fissured cervix it acts as a splint. A colleague informs me that recently a cervical catarrh which would have lasted for months under the usual local applications disappeared in three weeks while the patient was wearing this ring. Another tells me that it was prescribed as a preparation for operation in the case of a deeply fissured cervix, with catarrh, and that under its use the separated parts had spontaneously united up to the external os.

The most brilliant results of this pessary are, however, obtained in the treatment of prolapsed ovaries. Several typical cases can be referred to.

CASE I.—A woman of twenty-five years came to the Demilt Dispensary announcing that she had ovarian disease. She had had many physicians, and had been well instructed in regard to her case. She had suffered from migraine since puberty, and had married upon advice, in the hope that maternity would effect a cure. At the time of my first observation she had been married for three years, pregnancy had not occurred, and her distress had been aggravated rather than relieved. She had constant hypogastric and inguinal pain. Intercourse was unbearable, excepting just after the menstrual period. She found it difficult to endure the jolting of the cars and painful to walk, especially if jarred unexpectedly by stepping upon a stone. Menstruation was profuse, lasting a week, and headaches were almost constant, with special aggravations just before the flow. Examination showed laterally two large sensitive ovaries, and posteriorly a smaller mass continuous with the left tube. The ovaries were movable, but the posterior mass adhered. The uterus was in place. A diagnosis of chronic oophoritis was made. The tube was not enlarged, but simply displaced and adherent. This patient had recently been under the care of a distinguished gynecologist, visiting him at his office with considerable regularity during nine months. It would be but fair to state that she had had exceptional opportunities for obtaining relief. Hot injections were ordered, although the woman stated that they had already been persistently used. On September 1st an air-ring was inserted. For the first few days it gave pain in the left side, but from the first some relief of headache was obtained.

September 10th.—She stated that she was almost comfortable.

October 29th.—She stated that at her last period she had had one hour of her old inguinal pain, and headache for one day, but that otherwise she had felt well. Her mother noticed that she did not "grumble so much." At the end of three months she menstruated only two or three days, and her headaches had been reduced to a few hours just before the flow. Distress upon intercourse had ceased. Examination showed the ovaries still easily reached, but much less sensitive; the posterior mass still adhered, and the tube had elongated so as to arch over the ring. At the present time the patient feels perfectly well, can do her housework, and can go without the ring for a week without any return of her former symptoms. She no longer wears it constantly, but keeps one on hand and inserts it when she thinks a headache is threatened. Though anxious for children, her sterility continues. She is, however, happier than the woman in the case of operation cited.

CASE II is that of an unmarried woman of twenty-five years who, one year ago, while lifting a mattress, was seized with pain which for three days kept her in bed. Since that time she had suffered excessively with dysmenorrhœa and inguinal pain. She had emaciated, her appetite had been lost, and from a happy, rosy-cheeked girl she had become a pale, weary, hollow-eyed woman. Examination showed a perfect hymen, and with difficulty a retroflexed uterus and two enlarged, prolapsed ovaries were made out. Here, too, hot injections were used, and after a time pads, which always made her temporarily comfortable. They could only be worn a day, however, and during the intervals between their application all of her pains returned, and she was becoming discouraged, when recently, after three months' preparatory treatment, a No. 3 air-pessary was inserted. The relief was immediate, and with it in position she has menstruated for the first time without pain. The uterus is still retroflexed, the fundus lying upon the posterior bar, but sufficiently elevated, so that a free exit is secured. Hard-rubber retroflexion rings were tried several times in this case, but the posterior bar always took its position in the angle of the flexion,

her sufferings were increased, and inflammatory action threatened.

While the history is not yet complete, I give this case because it is the first case of an unmarried woman in which I have used this ring. Two other similar cases might now be given. In all three the hymen was perfect, and the theory of masturbation as a cause of the retroflexion could not be entertained. All are working-women, and it is believed that treatment which restores health will be in itself less likely to induce this practice than a continuation of their disease. In treating these unmarried women I am particularly careful to be business-like—to not unnecessarily prolong an examination or the manipulation necessary for treatment, and to discontinue douches and home attention so soon as possible. An operating-table should, in treatment, be preferred to a chair or bed, because not associated with the ordinary routine of life.

These two cases also fairly well represent two classes of ovarian prolapse—Case I, that in which the uterus holds its position, the prolapse being congenital or due to the disease *per se*; and the second, that induced by uterine dislocation. In both, support is the essential element in treatment, although in both, hot water, iodine, and glycerin also were used. I am able to present also a third case representing the adherent ovary. Here the problem is more difficult and a general rule can not be given.

CASE III.—A woman, forty-two years of age, unmarried, had ceased to menstruate one year previously. She presented herself in February, 1886, with a pelvic abscess; temperature, 102.5° F. The sac was toward the median line, upon the left side. It discharged through the rectum, refilling and emptying several times during the winter and spring. When the abscess was absent, a sensitive adherent ovary occupied its place. I supposed that the abscess was connected with the ovary in some way. The condition had probably existed for a long time. With the hope of obliterating the abscess cavity, on August 31st an air-ring was inserted. Even a No. 2 projected from the vulva, the contraction and infiltration were so great. No marked increase of pain occurred, and the ring continued at intervals to be borne. The hot-water douche also was persistently used. On October 5th the ovary was found slightly movable. On November 16th it adhered only at one side, and could be rotated through a distance of half an inch. The further entry reads as follows: "The pessary also rises an inch higher in the pelvis than on its first insertion, the patient walks better, has less pain, and professes herself improved. The abscess has not refilled."

Salpingitis.—Thus far my recommendation of support has been in harmony with the teachings of the books, differing from these only in the method employed and in the high estimate which I place upon it. In recommending the extension of this support to prolapsed and catarrhal tubes I, however, realize that I am advancing a new procedure, and that results only can justify me. The problem is more complicated, too, as salpingitis is commonly associated with peritonitis in either its acute or chronic form. Will this congested adherent mass brook interference? In the acute stage it

certainly will not. Where there is elevation of temperature, and yet the symptoms do not demand operation, rest, opium, and antiphlogistic treatment, according to the indications, must be used. Complete resolution may result. Martin has seen pregnancy after such an attack in some cases. In others, however, the inflamed broad ligament rolls backward so that the fimbriated end of the tubelies in Douglas's pouch, where a matting of lymph or inflammatory adhesions ultimately binds it down. It remains there, discharging into the peritoneal cavity in some cases, and in others, where the abdominal opening is closed, never fully emptying at all, but having a periodic discharge through the uterus about the menstrual period, somewhat after the manner of the siphonized underground springs figured in the geographies of our youth. More or less decomposition of the secretion occurs, and the discharge is said to smell bad. Endometritis, and even vaginitis, may secondarily result.

In a young girl, treated for vaginitis of several years' standing, it was found impossible to permanently heal an erosion upon the posterior aspect of the external os. It occurred to me that this location was one which would be covered by discharges from above, and examination showed what appeared to be a boggy tube upon the right side. On further questioning, I learned that, several years previously, there had been pain in this location. The excoriation referred to covers the cervix and invades the vagina so soon as topical applications are given up. There is now no pain, menorrhagia, or dysmenorrhœa; only this discharge to point to the original disease. The tube is, however, in this case at the side of the uterus; it is low, but not seriously prolapsed. When the delicate fimbriated extremity occupies Douglas's *cul-de-sac*, it is with each motion of the body triturated, one might say, between the uterus and the rectum, and pain can scarcely fail to result. For this condition there appears to be no spontaneous cure.

In the cases to be referred to it had probably existed for years. It is for this class of cases that support is recommended; not for acute cases, and not for cases where resolution and cicatrization have left the tube in place with the thickened, shortened broad ligament which appears to result from this disease. It is not recommended, then, in new cases, nor in very old cases, but in a collection of intermediate cases whose number is only too large. By support in these cases I hope to lift the whole mass beyond the point of friction between the uterus and rectum, to facilitate the discharge of the contents of the tube, and, finally, to forcibly break the adhesions which confine it. In this treatment the equable pressure of the ring has been more effective and better borne than the tampon of cotton pads. I have treated a considerable number of dispensary cases. Relief of pain is usual. The most surprising result has been, however, a more or less profuse discharge throughout one or two days after the application of the ring. This discharge is irritating in some cases. Subsequently, even the ordinary discharge complained of has commonly ceased. With relief of her symptoms, the dispensary patient stays away, so that the ultimate condition of many otherwise interesting cases can not be

known. I will therefore refer only to three cases in my private practice where careful records were made.

CASE IV.—A woman, thirty-four years of age, came to me in February of the present year. She was married, had had four children, two miscarriages, and one premature birth. The last pregnancy, three years previously, had resulted in a living child; the one before, in premature birth at eight months, and the miscarriages had preceded this. After the birth of the eight-months child she was very sick—had fever and convulsions, and was not expected to live. Both then and at the subsequent delivery the placenta was taken away in pieces, and the patient never had felt well since. She complained of sacral and inguinal pain, headache, irritability of disposition, dizziness, and defective sight. She could not walk. The reason was obscure, but appeared to be but an aggravation of her usual pains. She menstruated regularly, but for ten days afterward had colicky pains, and both before and after menstruation suffered with leucorrhœa of a yellow tinge. For one week midway between the periods she was somewhat relieved. Examination showed a large anteverted uterus and the cervix fissured deeply upon the left side; no erosions of the os. Posterior to the uterus was a marked degree of the boggy and sensitiveness formerly associated with cellulitis. Nothing was mapped out at that time on account of the tenderness, but afterward the right tube was found prolapsed and enlarged. Hot water, iodine, and glycerin were persistently used for over a month without improvement. April 7th an air-ring was inserted. April 10th the patient returned to say that a milky discharge was coming away from her like water, but that otherwise she felt well. There was no vaginal or vulvar congestion to account for the discharge, which was perfectly bland. April 17th the discharge had ceased.

May 25th.—Examination showed the tube freely movable and the general sensitiveness gone. With the ring in position the patient felt comfortable, and could walk as well as any one. When without the ring her old backache, and with the pain her old irritability of temper, returned. Subsequently she was able to discontinue the pessary. The discharge and pain about the menstrual periods had ceased.

CASE V.—A woman, forty years of age, was the mother of several children. She complained of sacral pain, headaches, and general irritability, with a leucorrhœal discharge. She had not walked any distance for years. Attempts at walking would be followed by a wretched irritable condition, which would persist for days. Previous to menstruation her distress was aggravated so that two weeks out of the month were spent upon the sofa or bed. Examination showed the perineum partially divided and the cervix fissured with some erosion about the os. The uterus was in position, but the parametrial tenderness was so great as almost to forbid examination. With some difficulty a tube was made out, not larger around than a slate-pencil, but with its distal extremity in the *cul-de-sac*, the bottom of which was thickened and contracted so as to draw upon the cervix and hold it firmly toward the back. The uterus was not freely movable, apparently from this cause. The tissues were of a normal feel anteriorly and upon the other side. From the first, support was aimed at in this case, but for two months all mechanical interference but aggravated the distress, and the treatment was restricted to the prolonged hot douche taken twice a day. During the third month iodine and cotton packing were used. At the commencement of the fourth month a No. 5 air-ring, partially inflated, was inserted. The first day there was a dull ache in the back, but afterward it gave no pain, and was worn constantly for two months. With its help the patient passed through a menstrual period without pre-

monitory disturbances for the first time in years, and was enabled to walk moderate distances without discomfort or fatigue. Examination showed the tube at the side of the uterus in an approximately normal position and the tenderness gone. The patient continued well, and shortly afterward discontinued the constant wearing of the ring.

CASE VI.—A woman, twenty-five years of age, was confined with her first child in June, 1886; had fever, and was quite sick. In November she came to me for menorrhagia. On examination, the uterus was found low and retroverted. The right tube also was sacculated and tensely distended. There was no dislocation of the tube, and no pain. The uterus was supported with an air-ring, and hot injections were used. Several weeks later the patient suffered with chilly sensations for several days, but still had no pelvic pain. The treatment was continued. Considerable leucorrhœal discharge was complained of during this period. In June of the present year the discharge had ceased, the patient menstruated only three days, and felt perfectly well. She had not worn the ring in several months. Examination showed, in the place of the sacculated, distended tube, a shortened and thickened broad ligament, and deviation of the uterus toward that side. The use of the ring in this case was simply prophylactic, in order to relieve the tension on the diseased part.

In employing the inflated ring the patient removes and replaces it herself, and, where there is no pain when lying, it is left out at night. Used in this way, it never becomes offensive in any way, and even very fastidious women have been found willing to perform the manipulations required. In selecting this pessary, the size should be large enough, so that the front bar shall be depressed by the pubic bone. The back bar then rises to the posterior *cul-de-sac*, and never takes any other position. Partial inflation is, as a rule, preferred. Having inserted it, the patient takes the knee-chest position, when it spontaneously rises to its proper place. The No. 5 is the size most commonly useful, although even the largest size may be sometimes required. In ordering Nos. 5 and 7, it is necessary to specify as to whether the old or the new style is desired.

In examining for salpingitis, I place the patient in the Sims position, and use two fingers, or even the whole hand to the thumb. It must be remembered that the exploration of the pelvis under these circumstances is a much more serious matter for the patient than where the ovaries only are concerned. In one very instructive case the patient, who had been several times utilized for teaching purposes, said to me: "When I first came I had only my blood too often, but now I also have pain." One examination was in this case, out of the usual time, followed by the discharge of clots and expulsive pains. In another case, also, pain and hæmorrhage of a week's duration occurred.

For the detection of enlarged tubes the mucous membrane of the vagina should be moved with the finger backward and forward over the mass just as the skin is moved over a tumor in the palpation of external parts. The object found must be traced to the uterus in order to make the diagnosis sure. The sigmoid flexure is often found contracted so as to closely simulate the sausage-like enlargement of a tube. Again, small

scybala in the sigmoid flexure will be mistaken for a nodulated, fimbriated expanse. The sigmoid flexure will of course be found continuous with the rectum, and the scybala can be brought down. But here, too, caution is required, as where the nodules are connected with the tube such manipulations may do harm. Having arrived at a diagnosis, I, as a rule, abstain from further deep manipulations, as superficial examination will afterward detect change in the relation of the parts. I do not use the sound or make intra-uterine applications in such cases.

The routine treatment consists, as a rule, of hot injections every two hours where the tenderness is great. Subsequently, with the daily douche iodine may be applied to the vault of the vagina and glycerin tampons lightly packed against it, and still later an inflated ring may be used. The object of the preparatory treatment is mainly to familiarize the physician with the peculiarities of the case. Until the ring has been inserted, in my experience but little subjective relief is obtained.

To summarize, diseased uterine appendages may be rationally treated by support. This support is best applied by the cotton tampon or the inflated ring. In cases of ovarian hyperæsthesia and prolapse, support relieves suffering and promotes cure. In cases of prolapsed and catarrhal tubes, pain has been diminished, adhesions have been broken up, the tube has returned to a lateral position, and the discharge from it has ceased. Shortening of the broad ligament has followed resolution in several cases. From three to six months is, as a rule, required for the treatment.

344 EAST FORTY-SECOND STREET, August 31, 1887.

THE ABORTIVE TREATMENT OF GONORRHOEA.*

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In considering this subject, the first question that presents itself is, What is meant by an abortion of a gonorrhœa? In relation to gonorrhœa, the abortive treatment seems to have two ends, as understood by the various writers. The first is to shorten or abridge an attack—a true abortion. The second, a so-called “abortion,” is to substitute a simple inflammation not tending to chronicity or to ulterior results (if this is the fact) for a true gonorrhœal inflammation which does tend to chronicity and ulterior results—*i. e.*, gleet, stricture, infection, etc.

The latter, a substitution of a *simple* urethritis for a virulent urethritis, is the most generally accepted object of the abortive treatment, and such a result is called a success.

As the so-called abortive treatment is by injection of caustic fluids, which must necessarily cause an increase

of inflammation upon the already inflamed membrane, the treatment itself and the object of the treatment would be absurd were the urethritis the same after as before treatment. Hence *something* must be different; the inflammation before and after the cauterization must differ, and that widely.

The upholders of the abortive treatment maintain that the inflammation before the injection was virulent, while the inflammation after the injection is simple. It follows from the foregoing that the injection must kill or counteract some poison, and that is the whole theory of the abortive treatment. This treatment by cauterization thus supposes a specific urethritis as distinct from simple inflammations of the urethra.

Some one now says: “If I believed in a specific urethritis, I could easily see the object of the caustic injection”—in other words, is gonorrhœa a specific urethritis?

By far the greater number of writers answer the question in the affirmative, and their belief is well set forth by Keyes. He writes: “Gonorrhœa in the male is an intense urethral inflammation, characterized by a period of incubation and by a profuse discharge of pus which possesses virulent qualities.” He also says: “Though the virulence of gonorrhœa is disputed by many high authorities who believe it to be a simple inflammation, it is impossible to see why it should not be called virulent. . . . It has a period of incubation, runs a course of varied length, possesses its virulence to the very end, and is in the highest degree contagious. . . . These are the qualities to which syphilis and chancre owe their claim to virulence, and why should it be denied to gonorrhœa?”

Under the subject of causation, Keyes says: “The cause of true virulent gonorrhœa is single—namely, contact of the affected person with gonorrhœal pus from another person.”

Fritsch, in his book on “Gynæcology,” speaks of erythrit or colpitis, and of the *Tripper* (gonorrhœal) infection, showing that he makes a distinction between them. For instance, he says that the pain on passing urine is almost characteristic of gonorrhœa-infection.

Schroeder, in his book on “Diseases of Women,” mentions in several places the gonorrhœa-infection as a separate and distinct disease. In his differential diagnosis he says: “The question which has the greatest practical importance is whether the disease is gonorrhœa or a simple colpitis.” I still quote: “From our present knowledge of the gonococcus we can not always with positiveness answer the question. . . . The symptoms characteristic of gonorrhœa, as pointed condylomata, purulent urethritis” (he speaks of the female), “and abscesses of the glands of Bartholin, are generally absent, and there is no characteristic form of the gonorrhœal colpitis.”

Thomas, in his “Diseases of Women,” affirms his belief in a one specific cause of gonorrhœa, and believes a gonorrhœal vaginitis to differ from a simple vaginitis. He does not think the presence of an urethral inflamma-

* From the “Journal” for October 8, 1887. Read before the New Haven Medical Association, September 7, 1887.

tion in the female is absolutely diagnostic of gonorrhœa, although it is strong evidence.

Bryant, in his "Surgery," does not attach himself to either side of the question, but quotes the opinion of Lee and Simon. The latter say that "urethritis may be caused by contact with a gonorrhœal discharge, by menstrual fluid, by leucorrhœal discharges, by chemical irritants, and by some constitutional causes, as gout and rheumatism," but neither Bryant nor his quoted authors say whether in every case the occasioned inflammation is a gonorrhœa, but hedge by calling it a *urethritis*.

Wyeth, in his new book on "Surgery," says "there is a specific form of urethritis which is very contagious, and as not amenable to treatment as are other forms."

Ziegler, in his "Pathology," says "the most important inflammation of the urethra is the gonorrhœal."

With these few quotations from writers who believe gonorrhœa to be specific, we will now give a hearing to a few of those who believe gonorrhœa to be nothing more than a simple urethritis. These writers believe the urethritic inflammations to differ only in degree, and as the inflammation approaches the severer degree it becomes the "so-called" specific gonorrhœa of other writers.

The views of the non-specific believers are well set forth by J. W. White, of the University of Pennsylvania, in his article on gonorrhœa in the "Encyclopædia of Surgery." I have not space to quote the whole of his argument against gonorrhœa as a specific disease, but he sums up as follows:

"GONORRHOEA.

"1. No period of incubation.

"2. Caused by a variety of agencies, chemical, traumatic, and infectious.

"3. Predisposes to a second attack.

"4. Associated only with ordinary processes of inflammation.

"5. May be reawakened or reproduced at will and indefinitely.

"SPECIFIC DISEASES.

"1. Definite period of incubation.

"2. Caused always by the absorption of a definite virus or morbid product.

"3. Protect from a second attack.

"4. Have distinct and almost unvarying peculiarities as regards their pathology.

"5. Run a definite course, and can not be made to return after their completion."

He believes that all inflammations of the urethra differ from each other only in intensity, not in any germ, and that various causes may produce severe symptoms, although he acknowledges that untoward symptoms are most apt to follow direct contagion with a purulent vaginal discharge.

Taking up his first point—that there is no period of incubation—it seems unfair to assume that, because gonorrhœa may show itself any time after the first twenty-four hours after infection, there is no period of incubation. Why can not the period of incubation be short, varying from twenty-four hours to several days,

as well as the accepted specific diseases with longer periods of incubation vary by a much greater number of days? The shortness of the period of incubation is easily accounted for when we remember that this poison is applied in concentrated form directly to the part which is most affected in this disease, and in that form which we believe to be ready for action without any change whatever, morphological or other. Keyes says "the incubation period of gonorrhœa is usually from five to eight days," thus expressing his belief in a distinct incubation period. Keyes further says that "when the cause of the urethritis is not gonorrhœa, the evidence of a commencing inflammation appears generally on the second day."

The second point that Dr. White makes—that gonorrhœa is caused by a variety of agents, and a specific disease by but one cause—can not be accepted in argument, as it asserts that a urethritis caused by contact with virulent pus from a vagina is the same as a urethritis caused by a chemical agent, and White himself acknowledges that the former is more likely to develop untoward symptoms.

His third point—that one attack of gonorrhœa predisposes to a second, contrary to the specific diseases—is, perhaps, his strongest argument.

But have we not an analogue in diphtheria, which we all believe to be a contagious disease with a specific cause?

And if Sânger, Oppenheimer, and others are right, that there is a "latent gonorrhœa," then we can easily see how such a gonorrhœa could again become acute by a renewal of the cause. Hence the purulent discharges after the first attack would be only a reappearance of the disease; as we have in syphilis.

His fourth point—that "the pathological manifestations of gonorrhœa are those of an ordinary inflammation, while the specific inflammations have distinct and almost unvarying peculiarities as regards their pathology"—can be easily answered if we believe that the gonococcus is the cause of gonorrhœa.

If we do not believe in the gonococcus, then the marked virulence of the urethritis caused by contact with gonorrhœal pus, and the fact that a few drops of gonorrhœal pus placed in a healthy urethra or into a healthy eye will positively set up an inflammation, while equal quantities of pus from other sources will not cause inflammation in these parts, certainly shows a distinct pathology. Were all inflammations of the urethra the same, one drop of pus, whether from a case caused by a chemical irritant or from a case caused by contact with a gonorrhœal epythrit, would have the same power of infection. This is not the fact; hence the drop of gonorrhœal pus must contain some specific element, although we may not have discovered it.

Also, in the female, the great tendency of gonorrhœa to set up severe uterine and tubal inflammation, while a leucorrhœa may go on for years without causing severe symptoms, certainly points to a pathology other than that of a simple inflammation.

His sixth point—that “gonorrhœa, contrary to specific diseases, can be reawakened and reproduced at will and indefinitely”—is another strong argument unless we believe in the “latent gonorrhœa.” If there is a “latent gonorrhœa,” we could easily understand how it could be reawakened, and we have a perfect analogue in the exacerbations of a sleeping syphilis.

The discussion for and against a “latent gonorrhœa” would take more space than the scope of this paper will allow, so I pass it by with only this brief mention.

Otis agrees with Van Buren and Keyes that genuine gonorrhœa can not be recovered from in less than four weeks. “If a urethritis is aborted, it was not gonorrhœa.” But he still calls gonorrhœa a *simple* inflammation and denies its specific character. Now *simple* inflammations can be aborted, and it would seem that, like other simple inflammations, gonorrhœa might be aborted.

Thus Otis appears to contradict himself.

Sturgis also does not believe in a special virus. He says “gonorrhœa in the male may be produced by gonorrhœal, leucorrhœal, and menstrual discharges.” Assuming, for the sake of argument, that the urethritis set up by any of these three causes is one and the same disease, he must acknowledge that a gonorrhœal vaginal discharge is by far the most frequent cause of urethritis in the male, while he must also acknowledge that leucorrhœa is very frequent among all women, and especially married women (Thomas says “no woman goes through life without a leucorrhœa at some time”). Hence, theoretically, leucorrhœa should be the most common cause of gonorrhœa. It might be said that the husband of a woman with a leucorrhœal discharge becomes, so to speak, acclimated to that particular discharge. Then if leucorrhœa produces gonorrhœa, such a husband, having had one attack of gonorrhœa, becomes *protected*, and we have an answer for one of Dr. White’s arguments against a specific gonorrhœa.

Again, can it be denied that a man with gonorrhœa can produce a gonorrhœa in a woman who already has a leucorrhœal discharge?

Now what is vaginal leucorrhœa?

According to Thomas, “it is a discharge of mucus or muco-pus as a symptom of inflammation of the vagina.”

Then if gonorrhœa is a simple inflammation, in the female it is a simple elytritis, and the discharge must necessarily be leucorrhœa. Then why speak of gonorrhœa as being caused by a “gonorrhœal” and by a “leucorrhœal” discharge? Why not speak of gonorrhœa in the male, and of leucorrhœa in the female?

And yet every writer who does not believe in the specific nature of gonorrhœa will describe leucorrhœa and gonorrhœa as two separate and distinct diseases in the female.

It might be suggested that gonorrhœa was the name given to the acute form of elytritis, and leucorrhœa to the chronic form; in other words, that they were dif-

ferent stages of the same disease. Then the whole argument is gone, for they are trying to prove to us that gonorrhœa in the male is *not* specific, as it is caused by two different discharges—namely, by the *gonorrhœal* and by the *leucorrhœal*.

Once more, if there is no such thing as a specific elytritis, then the elytritis caused by infection with gonorrhœal pus, which will give the gonorrhœal vaginal discharge, must be the same as the elytritis caused by endometritis, which will give the leucorrhœal vaginal discharge, which again overthrows the argument.

It would thus seem, gentlemen, that by far the most tenable ground is that occupied by the greatest number of learned writers, and that occupied by the majority of the profession—namely, that gonorrhœa is a specific and distinct disease.

Now, a specific disease must have a special cause, and for that cause, in this day of germ theories, we look to the bacteriologist. What has he done for us?

In 1879 Neisser discovered a coccus in gonorrhœal pus which he believed to be peculiar to that disease and its specific cause. He named this microbe the gonococcus. Neisser, Haab, Martin, Bumm, Kroner, Oppenheimer, and others have since, by extensive and multiple experiments, proved the gonococcus to be a distinct variety of coccus, and alone able to reproduce true gonorrhœa. I will not go into the experiments of these observers, but suffice it to say that the gonococcus was found to meet the three demands of Koch to prove that a given infective disease is caused by a given micro-organism.

These demands are: 1. “That one and the same spore be always found in a given disease.” 2. “That the same be easily recognized morphologically, or by its chemical relation as well as by its behavior to coloring materials.” 3. “That the disease may be artificially produced in a healthy individual by inoculation with pure cultivations of spores.”

Gonococci are found in the ophthalmic blenorrhœa of new-born infants whenever inoculation with gonorrhœal virus has taken place, although a purulent catarrh of the eyes may occur in the new-born with no gonococci.

Kroner stated that in ninety-two cases of ophthalmia neonatorum the gonococci were found in sixty-three. Twenty-one mothers of the children with gonococci, and eighteen mothers of the children free from the gonococci, were examined as to their vaginal secretions, and in every case the gonococci were found in the twenty-one, and never in the eighteen.

In September, 1885, Dr. Hall, in the New York Clinical Society, reported a case of acute gonorrhœa of five weeks’ standing, with inflammation of the knee joint. He aspirated the joint, examined the fluid, and found gonococci.

Westermarck, of Stockholm, reported a case of salpingitis in which, after operation, examination of the pus in the tube positively discovered gonococci. I will, however, not weary you by multiplying these instances.

Many observers and experimenters have tried to disprove the doctrine of the gonococcus as the cause of gonorrhœa, but their arguments and results are all weaker than those of the positive side.

Friedländer thus describes the gonococcus: "The micrococci of gonorrhœa build small mounds, and these mounds or heaps are always arranged in a characteristic manner. . . . They lie often upon the surface and in the protoplasm of the pus-corpuscles." He says "they can not always be discovered in the discharge, especially when a large number or other micrococci are present."

The manner in which the gonococci give rise to specific urethritis is ably described by Dr. Bockhart as follows: "The gonococci first land upon the pavement epithelium of the fossa navicularis, where they thrive and increase. They then rapidly work downward between the epithelial cells toward the papillæ of the mucous membrane, loosening the epithelial layer on their way through it, destroying some of its cells, and causing many of them to be shed, thus producing little apertures.

"Within eighteen hours, at most, the gonococci reach the papillary portion of the mucous membrane. During this process the secretion from the urethra is clear and contains epithelium and a few gonococci, either isolated or seated upon an epithelial cell. But now the gonococci, by their presence upon the papillary portion of the mucous membrane, induce a reaction on the part of the blood-vessels; white blood-corpuscles escape from them in which the gonococci increase and form little round heaps.

"The urethral discharge is now sero-purulent and consists of pus-cells, epithelium, and gonococci. Now the gonococci enter the lymph-spaces of the mucous membrane and press into its deeper layers, increasing rapidly. With this there is a great increase in pus-cells, and the discharge is composed chiefly of them, the gonococci being few and only in the pus-cells in the form of heaps.

"The constitution of the mucous membrane is slowly very much altered by the migration of the pus-cells. These take up more and more of the gonococci and carry them out in the secretion, which then consists only of pus-cells with heaps of gonococci, the loss of epithelium having ceased." Such is the description of the development of gonorrhœa by Bockhart. Now, if we are convinced that gonorrhœa is a specific disease, and especially if we accept the gonococcus, we can plainly see the object of an abortive treatment—a treatment that will kill the germ even at the risk of setting up an inflammation by our germicide.

Before discussing the methods of aborting, it might be well to ask how shall we know that a gonorrhœa has been aborted?

If we stop it in a few days, have we aborted it, or was it a very mild case of gonorrhœa?

If it continues, have we succeeded by substituting a healthy inflammation for an unhealthy one, as Bumstead and Taylor maintain the abortive treatment does,

or is it an unsuccessful abortion and the inflammation a continued gonorrhœa? It seems to me that unless we believe in the gonococcus we can not decide.

Believing in the gonococcus, we have gonorrhœa until the gonococcus disappears from the pus, and all abortive treatment is unsuccessful which does not bring about that result.

As to the various abortive treatments and the belief in the utility of the same, I will quote from various authors.

Dr. Bockhart, who has so ably described the action of the gonococcus, does not believe in abortive treatment, as at the time the patient presents himself the infection has gone too far. Welander, on the other hand, a firm believer in the gonococcus, regards abortive treatment, if the patient is seen during the first few days, as the proper treatment. His method is to first cleanse the anterior portion of the urethra, chiefly the fossa navicularis, with absorbent cotton, thus removing a quantity of epithelial cells which will show many gonococci in or upon them, and then to cauterize with a solution of nitrate of silver.

Bumstead and Taylor, who believe gonorrhœa to be a simple inflammation, highly recommend the abortive treatment in the first days of the disease. It is difficult to see, if gonorrhœa is a simple inflammation, what it is they propose to abort. If there is nothing to neutralize, counteract, or kill, why add a simple inflammation to one already existing, the inflammation being acute?

Who would recommend a nitrate-of-silver gargle or spray to an acute pharyngitis? Their abortive treatment, however, will do but little harm to the already existing simple (?) inflammation. Instead of a strong solution of nitrate of silver used once, they recommend a weak solution used several times. The strength of the solution recommended is one part of nitrate of silver to three thousand parts of water. How this solution could be much more than a cleansing solution I can not see.

Sturgis, who does not believe gonorrhœa to be a specific inflammation, rejects the abortive treatment with nitrate of silver as liable to cause untoward results, and as also unsuccessful in limiting the disease.

He believes dieting, rest, aconite, perhaps, and lead-and-opium wash to the parts to be the best treatment of the first stage.

Keyes, who, it will be remembered, believes gonorrhœa to be specific, says "the abortive treatment with corrosive injections is dangerous, and absolutely uncertain in its results."

"Those cases which get well," I quote, "are cases of urethritis, which, doubtless, would have recovered promptly under mild treatment, and, when it does not cure, it greatly increases the intensity of the inflammation, and leads with much certainty to stricture ultimately, and immediately, in many cases, to complications of the bladder and testicle."

J. W. White, the writer of the article on gonorrhœa in the "Encyclopædia of Surgery," is very consistent.

Not believing in a specific germ, he does not believe in an abortive treatment.

He orders rest, elevation of testicles, skimmed-milk diet, or approximate that diet as near as possible, and stoppage of all alcoholic and malt drinks, but does not interdict tobacco.

He also gives an alkaline prescription, to be taken after meals, at which time he finds the alkalies to be most effective, and also orders large quantities of water drunk.

Otis, as before stated, believes genuine gonorrhœa can not be aborted, but must run its course of about four weeks. He says if it is aborted it was not gonorrhœa, but he fails to say what it then was.

Thus, although he believes gonorrhœa to be a simple inflammation, he tacitly acknowledges that all simple inflammations of the urethra are not gonorrhœa.

Wyeth, who believes gonorrhœa to be a specific inflammation, disapproves of all corrosive injections, and, in fact, all injections of any kind, during the first stage.

Currier, in his various articles on "Gonorrhœa in the Female," at first recommended strong corrosive injections of nitrate of silver—as strong as 60 per cent.—but in an article in the "New York Medical Journal" for October 24, 1885, he disapproves of strong injections altogether, and recommends an injection of bismuth and glycerin (3 j to ȳ j). He believes in the gonococcus, and says this bismuth injection does not kill the germs, but starves them. He afterward states that the glycerin and bismuth so deplete the mucous membrane that the germs have nothing on which to feed, and thus starve. This is certainly difficult to believe, although the treatment may be good.

Bryant says nothing of an abortive treatment for gonorrhœa.

Schroeder believes gonorrhœa to be specific, and recommends, in the female, an injection of a five-per-cent. solution of carbolic acid as a preliminary treatment.

Fritsch says nothing of an abortive treatment, but recommends antiseptic injections for gonorrhœa, and prefers carbolic acid.

Dr. Charles T. Mitchel, of Philadelphia, in a pamphlet on gonorrhœa, disapproves of the injection of the corrosive solution recommended to abort gonorrhœa, as tending to convert a mild attack into a severe one, and to cause stricture. But he does recommend the use of bougies of some germicide, to either neutralize or modify the action of the specific virus.

Dr. Grandin, a writer in the "New York Medical Journal," believes corrosive sublimate, creasote, and nitrate of silver to be alone deadly to the virus of gonorrhœa.

In the female, after cleansing the parts thoroughly, he injects a solution of nitrate of silver (3 ss. to ȳ j—about a six-per-cent. solution) into the vagina, and a solution (gr. x to ȳ j—about a two-per-cent. solution) into the urethra. He then "has a simple inflammation easy of treatment."

Munnich, of Amsterdam, recommends injections of

resorcin (three-per-cent. solution) as abortive for gonorrhœa. He has the patient inject it every two hours during the day, and twice during the night. He finds under this treatment the symptoms speedily to ameliorate, and the discharge to become very slight by the seventh day, and almost invariably to have ceased by the fourteenth day. After the first day he reduces the frequency of the injections.

Professor Goll, of Zurich, has treated a number of cases of gonorrhœa with a two- to two-and-a-half-per-cent. solution of sulphate of thalline with very great success. It prevents all bad symptoms, and quickly changes the character of the discharge from a purulent to a milky or sero-mucous discharge.

Dr. Trusewicz, of St. Petersburg, has observed that amykos, an antiseptic, consisting of boric acid and thymol, will shorten gonorrhœa. At first he uses a weak injection, and after two or three days he increases the strength. By this treatment he professes to cure ordinary cases in a week.

Castellan, a Frenchman, has found an alkaline injection—namely, a one-per-cent. solution of sodium bicarbonate in water—very useful in shortening gonorrhœa and preventing disagreeable symptoms. He injects this solution three or four times a day. He finds the pus of acute gonorrhœa acid; hence he injects the above solution till the reaction is alkaline, which generally occurs in two or three days; then the gonorrhœa rapidly disappears.

Another French writer, Dr. Martineau, says that the gonorrhœal discharge from the vagina is always acid (as shown by litmus-paper), while the simple form of vaginal discharge is alkaline.

The suggestions of various writers as to the proper treatment of the first stage of acute gonorrhœa might be multiplied indefinitely, but, with this brief notice of a few authors and writers on this subject, I hope to have touched upon the varied opinions of the profession.

I have purposely not confined myself to the specialists on this subject, but have referred to a few only of the venereal surgeons, to a few general surgeons, to a few gynæcologists, and to a few pathologists, hoping thus to get a more general view of the subject as it will interest us general practitioners.

In closing this paper I will give a *résumé* of the subject as I believe it now stands:

1. Gonorrhœa is a specific inflammation.
2. It is, in all probability, caused by a special microbe.
3. The gonococcus of Neisser is, almost beyond controversy, the specific cause of gonorrhœa.
4. The abortive treatment of gonorrhœa with corrosive injections is unjustifiable and unsatisfactory.
5. The only abortive treatment should be with weak antiseptic injections, combined with the constitutional treatment.

THE USE OF HOT WATER IN SURGERY.*

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THE use of hot water in surgery is the subject to which I purpose calling your attention on this occasion.

In a paper read by me before the surgical section of the American Medical Association, at its meeting in Washington in May, 1884, on "Railroad Injuries of the Extremities of the Human Body," etc., I considered the hæmostatic effects of hot water when applied to the abraded surface of operation wounds. (See "Journal of the American Medical Association," vol. iii, p. 372.)

In a paper also presented by me, on the "Protective Treatment of Open Wounds," before the New York County Medical Association in February, 1885, the principles involved in the method of treatment of wounds by *hot water* were more fully discussed, and the results of experiments demonstrating the protective power of a film of coagulated albumin were shown, absolutely preventing the ingress of atmospheric germs; and being composed of autogenous material, there was no possibility of any toxic effect on the part of the agent employed, as against the many recorded instances of poisoning by the use of carbolic acid and corrosive sublimate.

It is now my intention, after over two years' further experience, to consider the results obtained, and to answer sundry criticisms, undoubtedly due to a total misunderstanding of the principles involved in the method and mode of application of the remedy.

Since the commencement of the practice under consideration in August, 1879, in many operations, both capital and minor, in hospital as well as in private practice, and frequently with the most unhygienic surroundings, there has been observed, except in one case, an absolute exemption from sepsis in any form. This case will be considered further on.

The method of treatment of operation wounds by hot water is based upon the following propositions:

1. After the larger vessels have been tied in an operation wound there occurs an outward flow from the divided arterioles, venules, and lymph-spaces of a sero-sanguineous fluid, highly albuminous in its character, in varying quantity, and continuing for a longer or shorter period.

2. As long as this outward flow continues there is a perfect immunity from infection by atmospheric germs.

3. The application of hot water checks this outward flow, coagulates the albuminous elements in the fluid, and forms an impenetrable shield over the surface of the wound.

4. Hot water applied to the abraded surface acts as a powerful cardiac stimulant and controls shock.

In order to test the temperature necessary to produce coagulation of albumin contained in serum, the following experiment was made:

A test-tube was partly filled with serum, and a thermometer so arranged that the bulb was immersed beneath the surface of the fluid. The test-tube was immersed in water and heat applied. At 68° C. (=154° F.) the serum, at first bright red, became darker and partially coagulated, and at 70° C. (=158° F.) it assumed a grayish, muddy appearance, and was completely coagulated. It was observed that the temperature of the water in which the test-tube was immersed exceeded that of the contents of the test-tube by about 14° C., or 57° F. In the first instance the hot water employed stood at 179.6° F., and in the latter at 183.2° F. Or, in other words, it is necessary that the water should have a temperature of not less than 183° F. in order that firm coagulation may result. At 200° F. to 212° F. it will blister if applied to the skin, and if a sufficiently prolonged application is made, will *cook* the abraded surface, or, in other words, coagulate the albuminous elements in the superficial capillaries, and still further increase the protective power afforded by the method.

I am in the habit of using water slightly below the boiling-point, or at the only diminution of temperature it would suffer during the time occupied in transit from the fire to the operating-room.

It seems to me evident that, owing to the greater vitality of the deeper-seated muscular tissues, they possess much greater powers of resistance to the effect of heat than the skin. In making the application, this fact should be recognized, and care taken to prevent the water running beyond the abraded surface and blistering the surrounding integument, as I have seen occur in several instances owing to carelessness of the one making the application. *The application should be continued until ALL OOZING is stopped, the parts are thoroughly GLAZED, and the red hue of the tissues is decidedly deadened.*

The secretions which take place from operation wounds treated by this method are usually of a clear or slightly opaque serum, and which, after thirty-six or forty-eight hours, may contain flocculi of coagulated albumin in a greater or less quantity, governed by the intensity of the application and the amount of the previous oozing. This appearance of albuminous flocculi is more especially observed in cases in which the wound is closed and treated by thorough-drainage. In open wounds the albuminous deposit is more appreciable to the eye, resembling in some cases the exudation of diphtheria. This exudation in the course of a few days is thrown off, leaving a healthy granulating surface beneath.

The immunity from septic absorption which is afforded to patients who may have undergone capital operations under the most unsanitary surroundings is well illustrated by the case of Thomas G., who was admitted to the Jersey City Hospital, July 18, 1883, for lacerated wound of the foot, and who underwent amputation of the leg at its lower third, and that of Adam H., who was admitted to the same hospital, July 23, 1883, for compound comminuted fracture of the leg, followed by amputation of the thigh at the lower third.

* From the "Journal" for October 15, 1887. Read before the New York State Medical Association, September 27, 1887.

Both were the result of railroad injuries. G. and H. were both discharged, cured, September 3, 1883.

The point of interest lies in the fact that there were in the hospital at the time, in the same ward, several cases of erysipelas and a large number of chronic abscesses, and in the female wards immediately overhead four cases of puerperal fever. At no time during the progress of treatment was there observed the slightest untoward symptom. As a promoter of reaction, cases are constantly occurring which illustrate the power of hot water as a cardiac stimulant when applied to the abraded surface of an operation wound.

In a case of hysterectomy performed by Dr. Nathan Bozeman, in which the symptoms of shock were urgent, I injected into the peritoneal cavity water at 120° F., with an immediate arrest of collapse, and rapid and complete reaction.

In a case of suppurative peritonitis due to perforation of the appendix vermiformis, for which I performed laparotomy in June, 1886, I injected water at the same temperature as in the preceding case, thoroughly washing out the cavity of the abscess. The patient recovered, although he was bordering on collapse at the time of the operation.

In the "Medical Record," March 19, 1887, Dr. W. Gill Wylie reports a case of laparotomy in which he used water at 105° to 110° F. for the relief of shock and arrest of hæmorrhage, with immediate relief of the symptoms. After describing the operation, he uses the following language: "I noticed that not only was the bleeding checked by the hot water, but the indications of shock, which were present to an alarming extent—that is, feeble heart's action, cold perspiration, etc.—were at once relieved by the hot water. . . . The result was magical. After this the symptoms of shock did not return, and at no time was there a subnormal temperature."

These statements of Dr. Gill Wylie are, I believe, absolutely true, as I have during the past eight years demonstrated time and time again; in fact, so frequently as to lose all novelty to those who are in the habit of witnessing operations in St. Francis Hospital,

When, however, the astonishing discovery is made, in 1887, that hot water will arrest oozing, and that hot water will promote reaction and relieve shock, we are forced to the conclusion that a portion of the medical periodical literature of the day has been overlooked by the gentleman. I can not bring myself to believe that he would intentionally claim as his own a procedure in the treatment of operation wounds which I, on two occasions—viz., in the "Journal of the American Medical Association" in 1884, and also in the "New York Medical Journal" in 1885—announced to the surgical profession, and which I have continuously practiced since 1879. He has no more claim to priority in the method of treatment of wounds by hot water than he has to the invention of Corning's method of using cocaine, or to Sims's dilator.

The restorative powers exerted by hot water on the general circulation are also, to as great an extent, mani-

festated on the local circulation of a part whose vitality is to a certain extent damaged by contused or contusolacerated wounds, as of the extremities, such as we often meet with in hospital practice among the employees of the numerous railroads which have their termini in our midst. Poiseuille has shown in his experiments on the web of a frog's foot that, if the part be covered with water at 104° F., the rapidity of the current in the capillaries is so much increased that we can hardly distinguish the form of the corpuscles. These injuries are usually sustained by the coupling of cars, and exhibit every variety of severity from simple rupture of the skin, with subcutaneous extravasation of blood, to a general crushing of the whole part into a homogeneous mass, for which the only remedy is amputation. For the treatment of every degree of injury except the last mentioned the limb is placed in a water-bath as hot as can be borne, and retained for a half-hour at a time. These baths are repeated three or four times a day. The part injured, during the interval, is wrapped in oakum wrung out of hot water, and covered with oiled silk. By this method many a limb has been saved which seemed damaged beyond recovery.

There seems to be a lack of appreciation on the part of some who have criticised and profess to have practiced the method under consideration. The late Professor Frank H. Hamilton, in a very able article on "The Art of Primary Union by Adhesion," published in the "Medical Record," January 2, 1886, says: "Dr. Varick recommends that the water have a temperature slightly below the boiling point; this might do if one were to apply it by means of a sponge, and then only for an instant. . . . But if employed continuously or by irrigation through the nozzle of a tube, it ought not to exceed in temperature 112° or 115° F., or a temperature which may be easily borne by the hand." Dr. Hamilton evidently failed to appreciate the mode and object of the application advocated by me.

The application is always made with a clean sponge or sheet lint, and is kept in contact with the part for several minutes, or frequently renewed applications are made, until the changed appearance of the parts is observed as previously described.

Again, the object of a high temperature for the coagulation of the albuminous exudate on the surface of the wound is not recognized. The temporary glazing which occurs over the surface of a wound, as the oozing gradually and spontaneously ceases, must not be confounded with, nor considered as identical with, that produced by the application of hot water.

The glazing first named is nothing more than the result of coagulation of the sanguineous flow, having a surface of serum with an underlying clot, and due to fibrinous contraction and a process of desiccation. It is highly putrescible and easily washed away. As albumin at the temperature of the body is fluid, it possesses no protective power and partakes of the same liability to putrefaction as the other elements of the exudate. Hot water applied deprives it of its putres-

cible property, and it will exist unchanged for an indefinite period. I have kept a film of coagulated albumin, applied to a piece of fine linen, unchanged for a period of over four months, while the beef-tea, for which the albumized linen was used as a cover, remained absolutely unchanged for a like period.

Before I used hot water, and used warm water instead, the effect invariably was to increase the outward flow, to keep patent the divided capillaries, and prevent the glazing of the parts; and many cases of sepsis followed. It seemed that the danger of contamination of the wound was enhanced by this method.

An amusing instance of failure to comprehend the principles involved in the subject under discussion occurred recently in a hospital not a thousand miles from New York. A surgeon, having occasion to perform an amputation at the lower part of the leg, and after ligating the vessels, was annoyed by a somewhat free oozing which he was unable to control. A gentleman present, who had on several occasions witnessed the hæmostatic effect of hot water in St. Francis and Jersey City Hospitals, suggested its use in this case. The hot water was brought and cold water added until it could be easily borne by the hand, then by means of a sponge it was applied for a moment several times. This proving ineffectual, the sponge, now saturated with water scarcely more than blood-warm, was held at a distance above the wound and the water allowed to trickle over the surface. It is needless to say this also failed. The verdict of the sapient operator was that "hot water is no good."

It would be impossible, even if it were desirable, to occupy the time of this assemblage with an enumeration of the various operations to which this method is applicable, and in which it is being constantly resorted to. I shall therefore content myself with a detail of major amputations performed by me since 1879, with a comparison of results obtained by me with that of others collected from statistics furnished by various authors in this country and Europe.

In the "International Encyclopædia of Surgery," vol. i, p. 626, in a table showing the comparative mortality of amputations for injury and disease, we find the following percentage of mortality for major amputations by the authors enumerated :

	Cases.	Mortality. Per cent.
Malgaigne	560	53·3
Trélat	1,038	47·5
Golding Bird	859	31·8
Callender	358	20·6
Butlin and McCready	416	18
Holmes	500	31·6
Spencer	557	26·9
Chadwick	692	26
Gorman	296	36·4
Varick	90	44·4
Norris and Morton	982	25
Ashhurst	100	28
Total cases	6,448	
Mortality		32·9

In the London "Lancet," April 9, 1887, we find at page 720 a paper entitled "The Result of Major Amputations treated Antiseptically in the Newcastle-on-Tyne Infirmary from April 1, 1878, to December 31, 1886," by Mr. Frederick Page, as follows : Three hundred and eighty-two major amputations, with a mortality of 7·5.

At the University College Hospital, up to May, 1871, of 307 consecutive major amputations 79 proved fatal—a mortality of nearly 25 per cent.

Of 53 consecutive major amputations performed by me and treated with hot water, I report 39 primary cases with 2 deaths, and 14 secondary cases with 1 death.

	Cases.	Recovered.	Died.
<i>Primary Cases.</i>			
Thigh	18	17	1
Leg	6	6	..
Arm	6	6	..
Shoulder joint	2	2	..
Right forearm, left thigh, with C. and L. wound of right foot.	1	..	1
<i>Secondary Cases.</i>			
Thigh	7	7	..
Leg	3	3	..
Arm	1	..	1
Hip joint	1	1	..
Forearm	2	2	..
Total	53	50	3

Mortality, 5·6 per cent.

The fatal cases were as follows :

1. Fred. H., admitted to Jersey City Hospital, August 13, 1882, for compound comminuted fracture of the leg, for which amputation of the thigh at its lower third was done. There were several attacks of secondary hæmorrhage, and, although the femoral artery was ligated in Scarpa's space, he died of a sudden hæmorrhage on the 26th of the same month.

2. Cornelius P., a private patient, suffered amputation of the arm on account of caries of the elbow joint. He progressed favorably from the time of operation, September 2, 1884, up to September 8th, when he died of a sudden attack of angina pectoris.

3. Noah R., admitted to St. Francis's Hospital, Jersey City, October 26, 1886, having sustained a compound comminuted fracture of the right forearm, a complicated, compound comminuted fracture of the left leg, and a contused and lacerated wound of the right foot. Amputation of the right arm and left thigh was done, and the remaining foot dressed with iodoform. He bore the operation well, and progressed favorably until November 1st, when symptoms of septicæmia developed, and he died November 7th, on the eleventh day after the injury. The operation wounds had united to nearly their whole extent by first intention, but the remaining foot had sloughed extensively, and was no doubt the source of his septic infection.

The case of P. might with propriety be excluded from the list of unsuccessful cases, as he died of a disease totally unconnected with the amputation, and which he had suffered from on several occasions previously. Excluding this case, the rate of mortality would be reduced to 3·7.

Of the 53 cases recorded above, 44 were performed on account of railroad injuries. Thirty-four of the 53 cases reported by me occurred in St. Francis's Hospital,

Jersey City, from August 12, 1879, to August 1, 1887, with the following result :

HOT-WATER METHOD.

	Cases.	Recovered.	Died.
Thighs	16	16	..
Legs	4	4	..
Arms	5	5	..
Forearms	6	6	..
Hip joint	1	1	..
Shoulder joint	1	1	..
Right arm and left thigh	1	..	1
Total	34	33	1

Mortality, 2.9 + per cent.

During the same period, in the same hospital, in the same wards, and with the same hygienic surroundings, there were done 25 major amputations under Lister's method, with the following result :

LISTER'S METHOD.

	Cases.	Recovered.	Died.
Thighs	10	6	4
Legs	3	3	..
Arms	7	6	1
Forearms	2	2	..
Shoulder joint	1	..	1
Both legs	2	1	1
Total	25	18	7

Mortality, 28 per cent.

Enough has been said to illustrate the therapeutic effects of hot water in surgical practice. It has stood the test of time and experience, and fulfilled every claim made for it. The results obtained in major operations under its use are unexcelled by any other method of antiseptis, while in the matter of major amputations it is unequalled. Simplicity and convenience are its characteristics.

The baseless fear of using water too hot may have deterred some from using the method, while others again look with disdain at the lack of display of the paraphernalia employed, the homespun nature of the appliances used, and there is absent that foreign glamour which to some presents an irresistible fascination. In it the gauze, protective, and carbolic spray find substitutes in a wad of oakum and grandmother's tea-kettle.

Since the preceding paper was written I have received the following letter from my friend, Dr. J. D. McGill, Surgeon-General of New Jersey, and one of the surgeons to St. Francis's and Jersey City Hospitals :

Dr. T. R. Varick.

DEAR DOCTOR: Inclosed you will find a record of eighteen capital amputations which have occurred in my practice during the last four or five years.

Six of these amputations were performed and subsequently treated according to Lister's method; the remaining twelve (all amputations performed by me since March, 1885) were treated at the time of operation with hot water, after the method advised by yourself.

The subsequent treatment of these twelve cases has been to observe absolute cleanliness, and to insure perfect drainage.

The iodoform dressing has been the one employed.

LISTER METHOD.

SITE OF OPERATION.	No. of cases.	Pri- mary.	Second- ary.	Recov- ered.	Died.
Thigh	1	1	..	1	..
Arm	2	2	..	1	1
Forearm	1	1	..	1	..
Leg	2	2	..	1	1
Total	6	6	..	4	2

The deaths were in both cases due to septicæmia.

VARICK METHOD.

SITE OF OPERATION.	No. of cases.	Pri- mary.	Second- ary.	Recov- ered.	Died.
Thigh	3	2	1	3	..
Leg	4	4	..	4	..
Foot (Pirogoff's operation)	1	..	1	1	..
Arm	2	1	1	2	..
Forearm	2	2	..	2	..
Total	12	9	..	12	..

Yours respectfully,

J. D. MCGILL.

ACETANILIDE AND ANTIPYRINE IN THE TREATMENT OF EPILEPSY AND CERTAIN ALLIED DISORDERS.*

By JOSEPH LEIDY, JR., M. D. (UNIV. OF PA.),

RESIDENT PHYSICIAN AT UNIVERSITY HOSPITAL, PHILADELPHIA.

ALREADY medical journals are in receipt of communications the tenor of which is to decry the use of antipyrine and acetanilide; it was hoped that these remedies had proved exceptions to the majority of new drugs, in that they had come to stay. It is not, however, the object of the present article to discuss their use as antipyretics, but in the treatment of epilepsy and certain allied affections, with the hope that the conclusions drawn may be of some value to those already interested in the action of these powerful remedies.

The control which antipyrine and acetanilide manifest over the nervous system has led many observers to use them in the treatment of a variety of nervous affections. Medical journals at home and abroad have devoted no small space to the reports of cases so treated. So fragmentary are they, however, covering so few cases, that conclusions could hardly be drawn with any hope of acceptance by the general profession.

Within the past few months the writer has had an opportunity of giving these drugs a pretty fair trial in several cases of epilepsy, hysteræpilepsy, hysteria, insomnia, paræsthesiæ, and various crises of tabes dorsalis, nervous headaches, neuralgias, sciatica, lumbago, and rheumatism, with results which, though encouraging, are hardly sufficient to warrant their maintaining the position which many have alleged for them.

Much material has been obtained from private hos-

* From the "Journal" for October 29, 1887.

pital and dispensary practice ; the greater part has been utilized. The reports of many more carefully selected cases from American and foreign journals have been reserved for statistics.

The cases of epilepsy were selected irrespective of their causation or variety. Those of *tabes dorsalis* were all of syphilitic origin. Headaches were mostly of the congestive type.

Neuralgias consisted of the trigeminal, intercostal, visceral, and suboccipital varieties. Cases of insomnia were the result of over-work and nerve exhaustion ; two cases were of obscure origin, with an hysterical element.

The following concise notes are given of a number of the more interesting. Want of space prevents full reports of all the cases treated :

CASE I.—Ab. N., aged twelve. Father and brother epileptics. When a year old, received a severe injury on the back of his head from a fall of nineteen feet ; was picked up unconscious ; developed epilepsy two years ago. At first the attacks were simply epileptoid, numbering three or four a week ; they gradually increased in number and violence until he averaged one or two a day. Gastric and brachial auræ well marked. The convulsion begins in the left hand, extending upward and involving the left side, and finally becoming general ; lately he has developed a well-marked post-epileptic mania. On July 2, 1887, he was trephined, with negative results ; bone and membranes normal. Has been treated with bromides separately and in various combinations, with nitro-glycerin, without the slightest effect, and antipyrine, which proved useless. Up to September 11th had never gone over five days without a seizure. On that day acetanilide, gr. iv, three times a day, was ordered. On the 12th he had a slight seizure. On September 24th he had another. An interval of twelve days having elapsed, the dose was increased to gr. viij. On October 4th there was another slight seizure. It was now noticed that he had frequent tremors, beginning in the left hand and gradually involving the left side, without loss of consciousness. Post-epileptic mania disappeared entirely. At the present time (October 20th) perfect freedom still exists.

CASE II.—William K., aged forty-three ; family history good. Epilepsy developed four years ago, one year following an attack of scarlet fever. Seizures preceded by buzzing in the ears, four or five attacks a day. Has been on bromides, nitro-glycerin, and acetanilide, with negative results. Antipyrine was ordered September 30th. Since then, the attacks have been reduced to three a day.

CASE III.—Joseph R., aged twenty-three ; family history good. Has had fits for three years, with an hysterical element. Acetanilide was ordered in January and continued until May 7, 1887, during which time he was perfectly free from attacks. Medicine was now stopped. Between May 7th and May 20th he had nine fits. Acetanilide was ordered again, and since then he has had no fits.

CASE IV.—Mrs. M. L., aged fifty. Fits since twenty-four years of age, two or three a week. Bromides afforded no benefit. Acetanilide, gr. vj four times a day, was given, which benefited her for two weeks, when the attacks became very violent and increased in number.

CASE V.—Robert B., aged seven, convulsions when a year old ; usually has one every week. Acetanilide, gr. iv, t. i. d. Convulsions increased to three and four a night.

CASE VI.—Charles H., aged seventeen ; father an epileptic ;

has had fits for ten years ; averages two or three a week ; interval between them never longer than four days. Acetanilide was ordered, followed by an interval of three weeks ; he then had four fits in one week ; since then, ten weeks ago, has had no seizures.

CASE VII.—M. J., aged thirty-four ; hysteria ; felt badly all the time. Ordered acetanilide. Took the medicine for two weeks with no benefit. Antipyrine was now ordered. Says she feels better, but does not know whether it was the medicine or not.

CASE VIII.—Martin S., aged thirty-five, male, insomnia, with hysterical elements. Acetanilide was ordered at bedtime, with desired results.

CASE IX.—John M., aged thirty-four, melancholia, with delusions of persecution. Antipyrine and acetanilide of no value ; seemed to feel worse afterward.

CASE X.—J. Mc., aged forty-two, *tabes dorsalis* ; specific history ; came under treatment when the disease was far advanced, was greatly benefited by the usual antisyphilitic treatment, but suffered greatly from formication, which symptom resisted all treatment, including galvanism. Put on acetanilide in April, 1887 ; experienced great relief after the fourth dose : has not been troubled since. I saw this patient in the latter part of August, and he was still free from this symptom.

CASE XI.—Mary S., aged forty-eight, *tabes dorsalis* ; specific history ; the gastric crises, attended with excessive vomiting and headache, were greatly relieved by acetanilide ; on stopping the administration, the symptoms returned, but were finally controlled.

CASE XII.—Mrs. M. J., aged thirty-five, operated upon for laceration of cervix, complains greatly of suboccipital headache and extreme nervousness. Antipyrine afforded no relief. Acetanilide relieved the headache and nervousness. Patient better than she has been since the operation, six weeks ago.

CASE XIII.—Laura M., aged nineteen, headache due to sexual excitement ; much pain at menstrual periods. Antipyrine negative. Acetanilide relieved the headaches completely, and afforded great relief at menstruation.

Of thirty-six patients with epilepsy, fourteen were greatly benefited by acetanilide and three by antipyrine. Acetanilide aggravated the attacks in four cases.

In five cases of hysteria, antipyrine proved itself a useful remedy, and worthy of further trial ; the results from acetanilide were negative.

In three cases of hystero-epilepsy, the results from both drugs were negative.

In four cases of insomnia the use of acetanilide was attended with some benefit. Antipyrine failed signally, although in one case, due to nervous exhaustion attendant upon sexual excesses, it proved effectual in relieving the headache and producing a refreshing sleep.

In fifteen cases of supra-orbital and suboccipital neuralgia, nine were greatly relieved by acetanilide and four by antipyrine.

In two cases of intercostal neuralgia, acetanilide gave immediate relief.

In five cases of nervous headache great benefit was obtained from acetanilide. Antipyrine proved of doubtful utility.

Of seventeen patients with sciatica, acetanilide benefited eight ; negative results with the remainder.

Of ten cases of lumbago, seven were relieved temporarily and two permanently by acetanilide.

In six cases of rheumatism, pain was greatly relieved by acetanilide, and in one case by antipyrine.

In five cases of *tabes dorsalis* the gastric crises and headache were relieved by acetanilide, formication disappeared in four cases under observation, in one case no benefit was derived.

In conclusion, it may be said—

1. *In epilepsy*, when acetanilide does good, its action is rapid; it does so by diminishing the violence and number of the attacks, and, as it has a tendency to aggravate the disease in some cases, the nature of which could not be determined, although it occurred only in those cases with a marked hereditary predisposition, its use should not be continued over two weeks unless some benefit has been obtained.

Cases of *petit mal* prove the more amenable to treatment, though in two cases of *haut mal* the drug was of great service. Antipyrine has proved itself inferior in every respect to acetanilide. Neither remedy is to be used as a substitute for the bromides, but simply as an addition to the limited number of drugs now at our command.

2. *As an analgesic*, acetanilide has proved itself a valuable remedy; the majority of the cases treated have been benefited. Antipyrine appeared beneficial in several cases, though it is not to be ranked with acetanilide.

3. *As a hypnotic* further experimentation is needed, but from the cases under observation both drugs are of doubtful efficacy.

In the administration, acetanilide was used first and considered the safer drug. From acetanilide there are no objectionable after-effects, except it be cyanosis, which only occurs after the ingestion of large doses, and usually in cases attended with marked elevation of temperature; on the other hand, collapse, disturbances of the gastro-intestinal tract, respiration, and circulatory apparatus, with fatty metamorphosis of the liver and kidneys (Dr. Porter, in "New York Medical Journal"), prove sufficient objections to the use of antipyrine.

The dose of acetanilide varied from gr. iiij to x; that of antipyrine from gr. x to xv.

In conclusion, I wish to express my hearty thanks to Dr. Pepper and Dr. Osler for their kind assistance, also to Dr. Burr, of the Orthopædic Hospital, and to my colleague, Dr. Harvey Shoemaker.

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UNIVERSITY HOSPITAL.

THE CORSET:

QUESTIONS OF PRESSURE AND DISPLACEMENT.*

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RIDICULE, argument, and invective have been freely expended upon the artificial small waist since the days of Martial and Galen. Yet the habit of corset-wearing has received little systematic study, and men's opinions are widely at variance. We frequently meet with the statement that corset-wearing works great injury; we discover a catalogue of five-and-ninety different diseases and disorders due to tight lacing; we find Bouvier, who has written the elaborate and interesting history of this article of dress, vigorously asserting that "the modern corset, moderately tightened, is without appreciable influence on the health of the healthy woman"—and we encounter all shades of opinion between these extremes. But unsupported assertion is poor evidence, although a general impression must carry some weight. To obtain clear perceptions of the action of the corset, I have endeavored to measure the amount of pressure it exerts, to ascertain the distribution of the pressure, and to determine the displacements resulting therefrom, studying the subject with as little bias as possible, stating bald facts, and rarely expressing opinions.

First a few words as to past usages. In the day of the primitive man, writes Bouvier, as soon as men were sufficiently elevated above the beast to admire the forms of women, women began to shape themselves to an ideal. Homer's Juno wore a many-layered girdle. The Greek women raised up hanging breasts and bandaged in prominent abdomens. The fascia and strophinum of the Roman lady, that the later poets tell of, were accused of deforming a chest, or crowding in an abdomen, or bringing about a curvature as effectually as any tight lacing of our day. These were the bandages, numerous and variously stiffened, that Galen inveighed against. In the dark ages the accomplishment vanished from western Europe, not to reappear until the sixteenth century. Then came the day of the perfect flower of small waists, as they have not been known before or since. The old portraits excite our wonder with good cause. The "corps" or corset of Catherine de Medici and Elizabeth was a "terrible engine," a case or sheath of nearly solid metal, rigid and unyielding. "To make their forms thin as a Spaniard's," cried Montaigne, "what hell will not women suffer, strained and lashed (*quindées et cenglées*) to the very quick?" Deep excoiations resulted from this pressure, and sometimes, he says, death ensued, even as Ambroise Paré also testified, citing his *sectio cadaveris* on a patient who died from such cause, in whom the lower ribs rode over one another (*chevauxçaient*). Before the year 1600, iron, ivory, and wooden busks † are credited with many abortions and much pulmonary hæmorrhage.

* From the "Journal" for November 5, 1887. Read before the Brooklyn Pathological Society, April 28, 1887.

† The "busk" is the front plate of the corset, which may be broad

Men wore corsets for a time. The next step was to begin at the cradle. In order to produce men and women of beautiful proportions and new forms one could not commence too early, and "any mother would have laid herself open to the charge of gross indifference to her children's welfare who neglected these early cares, reputed indispensable to any regular formation of body."

The French Revolution swept away the iron and bone cuirass and brought in its stead the comparatively pliable and yielding corset of our time. I find in the journals and current stories evidence that in the early part of this century tight lacing was far more prevalent than to-day. Women occasionally died in the harness. Goodman, of Boston, writing in 1829, speaks of a not unusual practice of wearing the corset at night, tightening it when lying down, and again in the morning on rising. He found servants wearing such busks as to prevent sufficient stooping or crouching to put the kettle on, or place it on any lower level than a bench.

Observations on Corset Pressure.—The first test applied was to determine the external pressure by the manometer.* The bent U-tube carries between its arms a sliding scale, graduated in both directions. All the tubing is practically inelastic. That near the bag

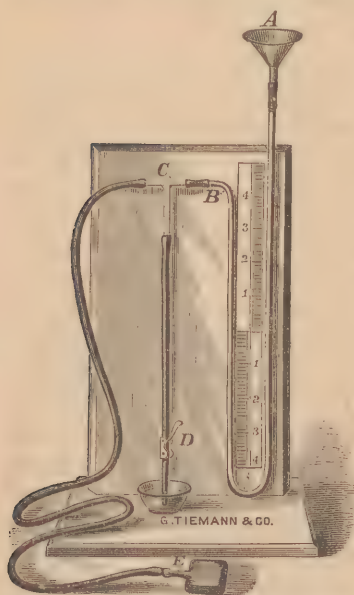


FIG. 1.—A manometer for testing the pressure. The bag, E, is slipped under the corset.

and the bag itself are re-enforced with cloth so that it is entirely inelastic. The T-branch running downward permits the bag to be filled or emptied without disturbing the mercury. The whole apparatus is filled with water to the perfect exclusion of air; the mercury is poured in so as to displace the water, and the water in the long limb adjusted above the mercury to the same level as that in the horizontal bend opposite. The bag must contain just sufficient water to bring its sides parallel

and about one fourth of an inch apart, so that we get four square inches of contact when it is held between two plane surfaces. When the bag is on the same level as the fluid in the tubes, the mercury columns exactly balance; the zero point of the scale is then adjusted to the top of the mercury; the bag is slipped beneath the corset, the instrument is so held that the bag and tops of the water columns are on the same

level, the corset is closed, and the readings are made. Care is taken, before every observation, to make sure that the levels are right, since a slight lowering of the manometer sends up the mercury column appreciably. Two inches of mercury displaced—*i. e.*, an inch on each side—will signify a pound of pressure to the four square inches of bag surface. To obtain the number of pounds pressure on one square inch of surface, the reading is divided by eight. The division tends to minimize any error.

Before recording these figures we may glance at other pressures in the body. I prefer to give the figures in pounds to the square inch, inasmuch as confusion arises from one observer speaking of an inch of mercury displacement when he refers to one column only, which would be named by another two inches displacement. If I speak of the mercury column I refer to the difference between the two levels.

The words "tight" and "loose" as applied to corsets need to be defined. They lack precision, but are necessary. We can not determine any limit of contraction in inches as the dividing line, since in cases cited farther on $1\frac{1}{2}$ inch lessening of waist measure with one woman will cause more pressure and more distress than 5 inches in another. The guide must be the patient's sensations—when we can trust her testimony—and signs that are readily appreciated, such as the restricted respiration and movement, evident discomfort when the corset is first hooked, flushing of the face in a warm room, and the indentations in the skin after removal of the corset.

Appearance goes for nothing; a large bust and wide hips or shoulders give an impression of slenderness in the waist which may be entirely deceitful.

TABLE OF VARIOUS PRESSURES IN THE BODY AS COMPARED WITH CORSET PRESSURE.	Pounds pressure to square inch, in decimals.	In eighths of a pound.
Blood-pressure, according to Foster, about.....	3.5	29
During labor pains, uterine force (Schatz).....	1.6 to 5	..
" " pressure in bladder, average (Croom).....	1.88	15
" " pressure in bladder, maximum.	3.2	25
Pressure in rectum in making straining efforts (Schatz).....	3	24
Expiratory force of lungs in man (Hutchinson)...	2.50 to 3	16
Inspiratory or suction force (Hutchinson).....	2	12
Pneumatic cabinet, increase of pressure bearable by patient.....	.5	4
" " decrease of pressure bearable by patient (Westbrook)...	.5	4
CORSET.—1st, Tight lacing.		
The maximum pressure recorded was over the car- tilages of the sixth and seventh ribs after a deep inspiration.....	1.625	13
Average pressure over sixth and seventh cartilages after full inspiration.....	1.25	10
Quiescent condition, over these cartilages.....	.625	5
" " mid-axillary line over sixth and seventh ribs.....	.5	4
" " epigastrium.....	.25	2
" " navel.....	.125	1
2d, Loose Corsets: 0.4 less than the preceding.		

and of one solid piece, or divided and furnished with buttons as in the modern model.

* This apparatus is modified from those of Croom and Schatz.

The total pressure exerted by a given corset is obtained as follows: The areas of like pressures are

chaiked out on the corset by shifting the bag about under the corset, and testing at every move with the manometer. Knowing the number of square inches in an area and the number of pounds of pressure to the square inch, the pressure exerted on that area is found; adding the pressures in the various areas together gives us a total. This is by no means absolutely accurate, but furnishes a tangible figure. This estimate errs on the side of too low pressure by entirely leaving out of account the pressure below the crest of the ilium laterally and posteriorly.

I give two illustrative cases :

X. Y., habit of tight lacing; four children; lax abdominal wall; corset rather short. Circumference at waist without corset, 29 inches; circumference at waist over corset, 23½ inches; difference, 5½ inches. The total pressure of her corsets is 65 pounds.

A. Z., vigorous, well built; one child eight years ago; has a strong abdominal wall; do not think she has worn tight corsets in some years, as she states; corset long. Waist measure without corsets, 27 inches; waist measure over loose corsets, 27 inches; no difference. Pressure, 40 pounds.

Same patient, waist measure without corsets, 27 inches; waist measure over fairly tight corsets, 25½ inches; difference, 1½ inch. Pressure, 73½ pounds.

The patient X. Y. had a flabby abdominal wall from frequent pregnancies and constant corset pressure. The patient A. Z. has a muscular abdominal wall; she says she works at home without corsets. These facts explain the seeming discrepancy that in the first case, with 5½ inches of constriction, the pressure is 65 pounds, while in the second, with 1½ inch, it is 73½ pounds. In one the parts readily yield; in the other firm resistance is encountered.

The least pressure I have estimated from a corset is 21 pounds; the greatest pressure I have found is 88 pounds.

A notable point in the use of the manometer is the distinct fall of the mercury during the first twenty seconds after the primary rise that occurs when the corset is hooked. This fall is followed by a slight rise or reaction before the mercury steadies itself. The main fall averages one inch (one eighth of a pound to the square inch), and must be due to displacement of organs and the expulsion of blood from the liver and abdomen and of air from the lungs.

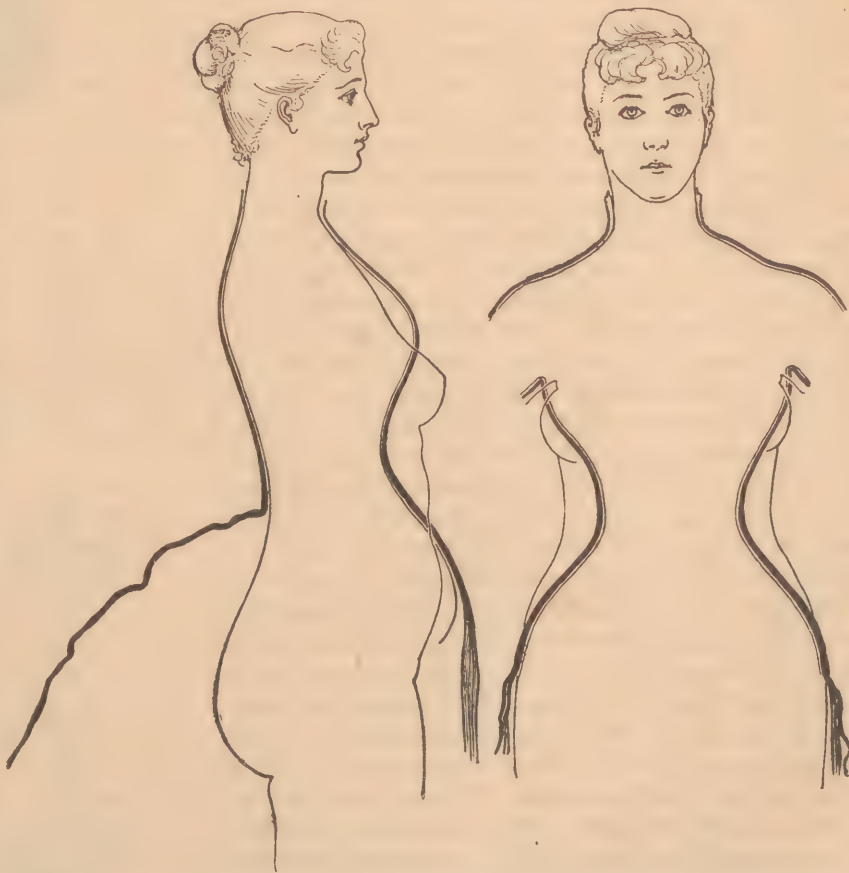
Within the half-minute that follows any exertion, such as rising, lying down, turning over, or straining, the mercury rises from ½ to 1½ inch, then gradually falls to its steady level. The reasons for these facts we may best study farther on in connection with the two cavities and their contained viscera.

On taking off a corset, one often observes that if the circumference of the waist is taken at once, and again a few minutes later, an increase of about an inch will have occurred.

Waist Measure.—Six inches difference between the circumference of the waist over the corset and the waist with the corset removed is the greatest difference I have measured. Five and a half and five I have met with once each. The least difference is in those cases where the measurement with and without is the same.

The average contraction of the 52 cases given in the table is 2½ inches. The maximum there is 4½ inches, the minimum 1 inch.

In the woman who wears no corsets the many layers of bands about the waist on which heavy skirts drag



FIGS. 2 and 3.—The heavy outline is the tracing of the corseted woman; the light, the same without corsets.

are sufficient to cause considerable constriction, as Dr. Mosher states.

We have seen that the amount of contraction at the waist bears no constant proportion to the amount of pressure exerted by a corset; we shall see that it bears no constant proportion to the diminution of vital capacity, excepting a very general one. The shape of the corset and the strength of its bones are other factors we must know, and the habit of the individual, the resisting or yielding nature of the abdominal walls, and the readiness with which organs are displaced, bear largely on the problem.

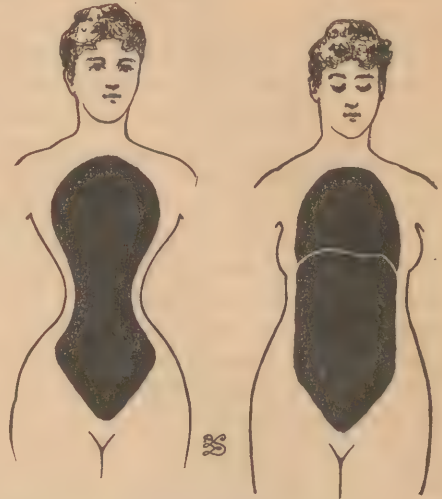
Effects of Pressure on the Thorax and Abdomen.—

The "statical and dynamic mechanism of the thoracic and abdominal cavities" differ widely, as Walshe remarks. The chest may be said to be filled with air, the belly with water. Schatz connected a glass tube filled with water with the water-filled lower bowel, and found that the fluid in the tube was always on a level with the highest part of the abdominal cavity,* whether the patient stood, sat, or lay down, and whether much or little water was injected. The thoracic organs may readily accommodate themselves to a pressure that simply squeezes out some residual air; the abdominal viscera must be displaced. Accommodation can only be favored by expulsion of blood from the cavity and reabsorption of the gases distending the intestine. Let us first consider the cavity of the chest.

Effect on the Chest—Alteration in Shape.—My sketches of the changes in contour of the thorax and abdomen were made by accurately ascertaining the normal and the corset outline in the same subject by blackboard tracings or shadows thrown on manilla paper. These seemingly exaggerated proportions have been verified by caliper measurements, and I have been careful to undervalue rather than to overstate my fact. The organs were filled in from the frozen sections of Braun, Ruedinger, and Hart, from the valuable atlas and illustrated writings of Sibson and from Frerichs.

The thoracic cavity suffers less diminution in size and alteration in shape from corset-wearing than the abdominal. The principal constricting effect is exerted below the fifth rib. In the mid-axillary line the lung does not descend below the sixth rib in tranquil breathing. Below this level the "chest-wall" practically is the cover for the abdominal viscera, and it is on these that the corsets bear. "The transverse diameter of the chest from the seventh rib to seventh rib, instead of being greater than that from fifth to fifth, as it is in males, is in females considerably less. The difference is greater or less according as the stays are worn more or less tight" (Sibson). Below the seventh rib the transverse diameter of the bony cage normally dwindles (Sappey), and from eleventh to eleventh is from one to one inch and a half less than the transverse diameter at the seventh or eighth. Bouvier measured one hundred and fifty subjects of both sexes and all ages, and found this relation constant. The corset increases this difference, and starts the downward taper at the fifth rib instead of at the seventh. Narrowing of the triangle between the cartilages of the lower ribs to a groove of the width of a finger is the extreme that Engel has sometimes seen. The inferior edge of the lung is therefore compressed, and its ability to distend the lower part of the pleural cavity seriously crippled. Compensation in part is effected by the tendency of the corset when firmly adjusted to raise the shoulders—which I find quite constant—forcing the upper lobes to do the breathing, as Sibson has proved, raising the thoracic, or five upper ribs, widening the interspaces (also a constant

condition in the female), and in this way expanding the highest part of the conical thoracic cavity. This broadening above and constriction below are shown in Figs. 2, 4, 5, 6, and 7. Freer play of the apices in women who wear corsets would lead one to expect consolida-



FIGS. 4 and 5.—The shape of the cavity when the corsets are tight; the same without corsets.

tion at these points to be relatively less frequent than in men, while affections at the base should be more commonly met with. An increased tendency to emphysema of the upper lobes might also be anticipated.

One other change may be noted in some frozen sections, and is occasionally observed in examination of

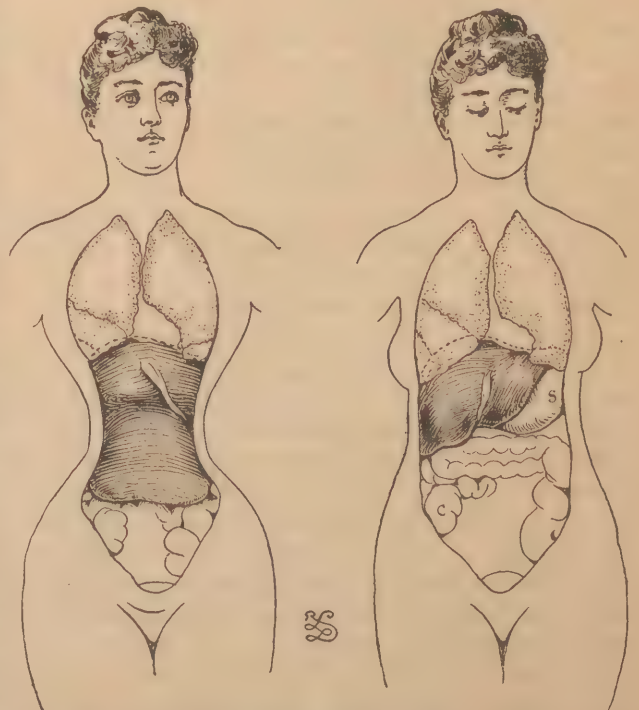


FIG. 6.—The displacement of viscera (tracings). FIG. 7.—The normal position of the organs (tracings).

the chest—namely, a more marked inward curve in the lower part of the sternum than is usually found in men,

* With certain allowances easily explained.

whereby the antero-posterior diameter of the lower part of the chest is somewhat diminished.

The Thoracic Breathing of Women.—May the peculiar character of the respiration in women be attributed to the use of corsets? Two observers who are especially qualified to testify have stated the case so forcibly that I quote them entire. Sibson has made by far the most extended of all the studies of the mechanism of respiration. His painstaking accuracy is Teutonic. Walshe's opinion carries great weight. Sibson says :

"In the adult female the form of the chest and abdomen and the respiratory movements are often undoubtedly modified by tight lacing.

"The form of the chest and the respiratory movements do not differ perceptibly in girls and boys below the age of ten. Although the form of the chest remains nearly the same until the age of twelve, the abdominal movement is then somewhat less and the thoracic somewhat greater in girls than boys. At this age and earlier stays are worn, and though they do not compress the body materially, yet they restrain the free expansion of the lower ribs during free exercise. After the age of fourteen the form of the chest and the respiratory movements differ materially in females and males.

"When stays are on there is a great exaggeration in the thoracic movement, the second ribs moving forward from 0.06 to 0.2 inch, while, when the stays are off, they only move forward from 0.03 to 0.1 (that is, one half as far). On the other hand, the movements of the lower ribs are much more restrained when the stays are on—the abdominal movement then being 0.06 to 0.11 inch, whereas when they are off it is 0.08 to 0.2 inch. The difference at the waist when measured with the tape is very striking, the increased measure during extreme inspiration being 0.05 to 0.3 of an inch when they are on, and from 0.6 to 1.5 when off (from two to thirty times as much). I have found the circumference at the waist from one to two inches less when stays were worn than when they were taken off. . . .

"I think it probable that in females, even if they wore no stays, the thoracic respiration would be relatively greater and the diaphragmatic less than in man ; but this is only surmise."

Delicate men, he says further, approximate to the female thoracic breathing, vigorous women to the male abdominal breathing, and long-distance runners have the least thoracic breathing of all men (in the quiescent condition).

The diaphragm would seem, therefore, to be a muscle capable of developing to meet increased demands as much as any other that the athlete strengthens.

Walshe objects to the supposition that the sexual difference is "preordained to meet the difficulties of pregnancy," as Boerhaave maintains, and asks whether ascitic females escape dyspnoea. "If we were forced," he says, "to the admission that the activity of infra-clavicular respiration-movement in the female is in the main

designed by nature"—for which no cause can be detected—"and independent of extraneous influence, still I can not help thinking that the great excess of that movement and the limitation of thoracic play to the upper thorax in the civilized adult female are due in no small part to the unyielding cases interfering with inferior costal and phrenic action. The agricultural woman, who knows not stays, breathes more like a man than the town female. Besides, during sleep the conditions of pectoral and ventral action of the female are much less strikingly different from those in the male than in the waking state ; the waist is relieved for a time from constriction. And, further, the male and female dog breathe almost exactly alike, as do the horse and mare ; the action is abdominal and lower costal."

Dr. Mays, of Philadelphia, has recently studied the respiratory movements of Indian girls in the Lincoln Institution. They had, always worn loose clothing. They ranged between ten and twenty years of age. Tracings from their costal and abdominal respiratory movements showed a very close analogy to those of the civilized male, and that, "so far as the Indian is concerned, the abdominal is the original type of respiration in both male and female, and that the costal type in the civilized female is developed through the constricting influence of dress around the abdomen. This is markedly shown in the greater prominence of the costal movements in those girls who were either one half or three fourths white, and who were hence dominated to a greater or less extent by the influence of civilized blood. . . . It is also evident that the costal type of respiration in the civilized female is not due to the influence of gestation."

"The expansion of the lower ribs," says Sibson, "is much more impeded than the descent of the diaphragm." By measurements to be detailed farther on, I find that, comparing full inspiration and complete expiration, the pelvic floor has a range of respiratory movement about one fourth less when the corsets are fairly tight than when they are off, whereas the lower ribs are so firmly incased as scarcely to expand at all. An old, broken, or very loose corset allows some inferior costal play ; but, since this is the location of the ring of most marked constriction, even these cripple it considerably.

In what degree the total expansion is limited by this article of dress I have attempted to work out by studying the vital capacity* with and without corsets. To compare the expansion as measured ordinarily in men by passing a tape-measure about the chest is scarcely accurate when applied to women, since the soft parts vary in thickness, the mammae being pushed upward by the corset and hanging down without it. The spirometer test is not open to any serious objection. I am greatly indebted to Dr. L. M. Hall for the labor involved in working out for me the following table :

* Hutchinson employed "vital capacity" to indicate the total number of cubic inches of air a man could expel from his lungs after the deepest inspiration.

Table showing the Effect of Corsets on Expansion in Fifty-two Women.

	Age.	WAIST.		Differ- ence.	VITAL CAPACITY.		Differ- ence.
		With.	Without.		With.	Without.	
Totals	1,100	1,245½	1,378½	133½	6,944	8,487	1,543
Averages	21.15	23.95	26.52	2.57	133.54	163.21	29.67
Extremes.....	13	21	23½	1	80	100	5
	35	29	30½	4½	220	260	75

The average age is twenty-one. The average waist with the corset off measures 26½ inches. The average measurement over the corset is 24 inches, or 2½ inches less. The average vital capacity is 163 cubic inches without corsets. The average vital capacity, wearing the corset, is 30 cubic inches less.

The individuals upon whom these observations were made were servants of the best class. One half were native-born, the other half Irish (seventeen), German, Swedish, and English. Except on festive occasions, our immigrants have rarely worn corsets before reaching this country. All these are women who work, and, consequently, should have a more vigorous muscular system and better expansion than wealthier corset-wearers, although Dr. Hall states that these servants lace tighter and are less healthy in appearance than the young ladies of the institution in which the observations were made. Among women who lead less active lives, while wearing closer-fitting street- and evening-dresses, it might be expected that the interference with expansion would be greater and of more serious import. In the cases given above the limitation is three sixteenths, or nearly *one fifth*.

We must remember always that our witnesses are inclined to perjury. The testimony is made to favor the corset, if possible, and to prove that it is not tight.

This table contains no instance of the eighteen-inch or sixteen-inch waists of which we hear accounts. The least measure is 21 inches. Nineteen inches and a half is the smallest circumference I have measured over the corset ; the patient's normal measurement was 24 inches.

To ascertain whether there was any constant proportion or relation between the amount of constriction and the diminution of the vital capacity, I worked out a number of tables, which showed that the lessening of the circumference of the waist and the lessening of the vital capacity bore no constant relation. The problem is not so simple. Hutchinson found in his study of vital capacity (in 4,800 males) that the chest circumference bore no direct relation to the vital capacity. In a man of five feet one inch the vital capacity averages 175 cubic inches, and it varies eight cubic inches for each inch in height. I have not been able to find the average height of woman, or any statements relating to her vital capacity as compared with man's. From occasional measurements in gymnasiums, however, I know that it is less than man's in proportion to her height.

Effects of the Pressure on the Abdomen.—The abdominal cavity has far greater pressure and much more marked alteration in shape to suffer than the thoracic. The change in its lateral walls has been considered in

part, and figured in Figs. 3 and 4. In antero-posterior section (Fig. 9) the deformity to which I would especially direct attention is the close approximation of the belly-wall to the spinal column, and the bulging of the hypogastrium. I have pictured no exaggerated instance, but give the tracing from a muscular young woman



FIG. 9.—Antero-posterior section ; shape of cavities with and without corsets.

who has never been pregnant, with an abdominal wall of better vigor than common.

It will be seen that without the corset the breasts project beyond the abdomen, just as in a finely devel-



FIG. 10.—Section through umbilicus, least pressure ; the black spaces indicate the empty intestines.

oped man the pectorals first touch a perpendicular ; whereas, when the corset has raised the "bust" and



FIG. 11.—Through first lumbar vertebra, great pressure ; the intestine (black) is the colon.

crowded the abdomen down and out, the supra-pubic wall becomes the most prominent and projecting part of the profile.

In transverse section the abdominal area at the level of the ensiform (Fig. 12) is normally about twice as



FIG. 12.—Section through epigastrium, area subjected to greatest pressure.

great as that at the umbilicus (Fig. 10)—above, deep, roomy, bean-shaped; below, narrowing and contracting to scarcely more than a slit that curves about the broadened mass of the spinal column and psoas muscles.

The corset reverses this. The constriction binds closest the broadest part; the viscera are displaced downward; the lower umbilical region swells out; the greatest area must grow small, and the smallest enlarge.

The point of greatest pressure, we have seen, was over the cartilages. On both sides the liver will be pressed upon, and this at a point where it is covered by lung only during deep inspiration (Fig. 12). The lateral pressure will crowd liver and spleen toward the median line. The stomach will be pinched between its more solid neighbors, though both liver and spleen mold readily under pressure.

Two inches lower, the section (Fig. 11) contrasts strongly with the first. That showed nearly solid viscera; this presents large air-filled spaces. Here the pancreas, kidneys, and a small part of the liver only would receive stress, and they are protected by large air-cushions in front.

Again, two inches lower, the section greatly differs from the second. At this level, that of the navel, there are no viscera, except intestines distended with gas.

So that we find that (1) where the solid organs are, the greatest pressure comes; (2) where the hollow viscera lie, little pressure comes; (3) on organs that are comparatively fixed in their places, much stress is brought to bear; and (4) on organs freely movable, like the intestines, less direct displacing force is exerted.

Effect of Pressure on the Abdominal Wall.—Long-continued compression of the wall of the abdomen in the epigastric and hypochondriac regions gradually brings about a thinning of its adipose layer.* Below the ring of constriction the fat accumulates. The woman who abhors "a stomach" yet adopts the most effective means of cultivating one. Flabby, old, or obese persons are especially prone to pile up panniculus adiposus below the navel. I have examined many stout young men in good condition, and have yet to find one

in whom this tendency is evident. On the contrary, the fatty layer above the umbilicus is usually thicker than that below it. These men wear suspenders. In eleven healthy women below thirty who have been in the habit of wearing corsets (of varying degrees of tightness) the fat below the navel has always been found to be more than twice as thick as that above, while one to three is no uncommon ratio. That this is not normal is proved by the fact that in two teachers of gymnastics, measured for me by Dr. Mosher, the fatty layer was thicker above.

The two sections in Fig. 13 speak for themselves. The man and woman were each twenty-one years of age. The woman, Braun says, was well developed and finely formed, and her abdominal wall had never been stretched by a pregnant uterus, as one would suppose at first glance. Above the pubes the wall is four times as thick as it is higher up.

That the compression acts on muscle as well as fat is clear when we call to mind the contrast between the hard abdominal parietes of the average man and the lax belly of most women. How could the gynecologist make his bimanual were it otherwise. Engel reports cases in which the peristaltic movements could be watched through walls thinned from tight lacing. Of course disuse and the less need of constantly balancing the body has



FIG. 13.—Sections of the anterior abdominal wall of the young female (F) and male (M), showing thinning from the pressure of corsets. (Braun, frozen.)

much to do with the atrophy of the abdominal muscles of the female. If Schroeder and his followers are right in attributing the expulsion of the head after it reaches the pelvic floor mainly to these muscles, we must credit the necessity for the use of forceps in a large number of cases to the practice of corset wearing. It is worth noting that the figure given by Schatz as the intra-abdominal pressure not uncommon in man during straining efforts is nearly the same as the *maximum* pressure in the bladder during expulsive pains (Croom), which the uterine wall has some part in augmenting by its forward displacement.

Effect of the Pressure on the Pelvic Floor.—With the corsets snugly adjusted the general cavity of the trunk is cased in walls that are nearly unyielding at all places but two. The ribs, spinal column, and corset-bones sheathe the body as far down as the iliac crests laterally and the hypogastrium in front. Of the suprapubic projection we have spoken. The other outlet for

* First mentioned, I believe, by Larget. "Thèse de Paris," 1827.

the pressure is the pelvic floor. It can be studied only in the horizontal position, either by tracings taken from

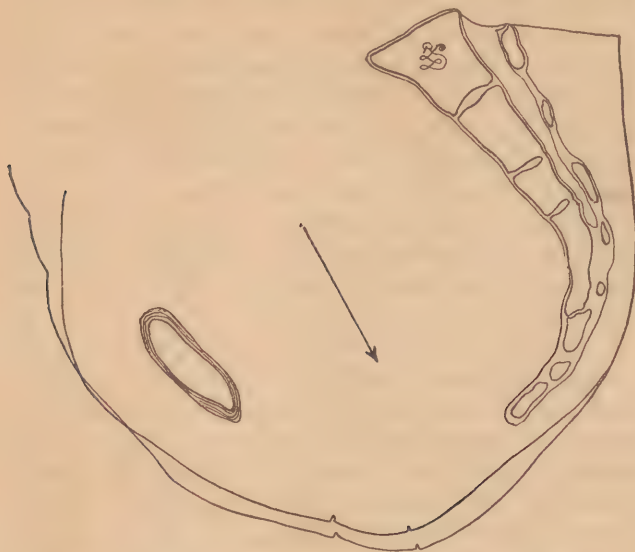


FIG. 14.—Tracing from the pelvic floor with and without corsets.

the thin lead strip passed along the groove from symphysis to sacrum and accurately molded, or by measurement of the projection of the floor by the instrument of Dr. Frank P. Foster. This projection is measured on a perpendicular erected on a line joining the tip of the coccyx and the lower edge of the symphysis pubis. In Sims's position, while the patient "has her clothing on but the corset unbuttoned,"* the average projection was determined by Dr. Foster to be 2.5 cm., or one inch. I find that tight lacing increases this projection over one third—the average of 5 cases measured being 0.9 cm. (0.8 cm. minimum, 1.1 cm. maximum). This is twice as much depression as the deepest inspiration causes (0.4 cm.), and often is very close to the *extreme yielding* of the pelvic floor brought about by straining or bearing down, which is in the neighborhood of 4 centimetres, or one and a half inch plus.

I quote the figures in a well-marked case (Sims's position):

Pelvic Floor Projection.

	Without corsets.	With corsets tight.
Quiet	2.6 cm. (1 inch).	3.7 cm. (1½ in. scant).
Deep inspiration	3.2 cm. (1¼ inch).	4.1 cm. (1½ in.).
Straining	4.0 cm. (1½ plus).	4.3 cm. (1½ in.).

I am inclined to believe that after a large number of cases have accumulated I can show that it is those women having roomy pelves, or pelves of less inclination than usual, whose pelvic floors sag most under pressure from above.

Effect on the Uterus.—This displacement of the pelvic floor and this abdominal pressure, acting on a cavity probably governed by the laws of fluid pressure, bear largely on the moot question of the importance of the corset as an agent in producing uterine disease and

displacement. I think there can be no question that the uterus must descend with the structures about it. With a corset that is "quite tight," but not so tight as the patient "could bear it, as in a new dress or at a ball," this displacement is a third of an inch. The distance seems insignificant, and may only be considered of importance in view of the following facts:

1. That this is almost the deepest position to which the structures can be forced by straining down.

2. That the long-continued action of the depressing force is exerted during the period of growth.

3. In view of the results likely to ensue in case of weakened and enfeebled supports, in case of increased size and weight of the uterus—normally present during menstruation—and in case of incipient displacement. It naturally follows:

4. That this forcing downward is sufficient to render the uterine supports tense (be they ligament, "column," or pelvic surroundings in toto), and that in their taut condition any extra or added stress, like deep breathing, or exertion, or bending, might well be enough to each time slightly overstrain these stretched supports. Slowly and steadily as this force acts, yielding must in time occur.

In fact, Engel states that in every one of thirty autopsies in which evidences of tight lacing were found, prolapsus was present in some degree, except where adhesions had prevented it.

It might be noted that the ovarian veins, which usually are valveless, run upward into the region of greatest pressure to empty there, and that the hæmorrhoidal branches of the portal vein, which also lack valves, will suffer from the damming back that must be caused by the severe compression of the liver.

The distortion of Fig. 15 does not need much commentary. The more this damsel bends, the greater the



FIG. 15.—The effect of bending forward, when seated, with and without corsets.

downward and backward push of her bulk. Will not this account in part for the uterine troubles of women supposed to be due to many of their sedentary occupations, such as sewing-machine work? The man bending forward relaxes his abdominal wall and enormously lowers his intra-abdominal pressure by so doing (Schatz),

* Letter from Dr. Foster, April 8th.

but the corseted female, who writes or sews, produces the opposite effect. In some cases I have recorded that in this position the pressure over the navel is about double that in the erect position, notwithstanding the abdominal relaxation. The exceptions to this augmentation of pressure are found where the corset-bones are broken or weakened and bend in into the epigastrium, and out again away from the pubes.

Effect of the Pressure on the Liver.—In viewing the transverse sections (Figs. 11 and 12) we saw that the zone of most marked pressure was over the liver. Laterally the ribs may be resistant enough to counteract this strain to a considerable extent; but over the cartilages, where the strongest compression of all is exerted, and in the epigastric region, the force must act with greater directness to push the anterior edge downward.



FIG. 16.—The heavy outline with corsets, the thin outline without corsets, the patient seated and bending forward.

Corbin, who has studied this displacement post mortem, states that, “as this viscus is fixed behind, its anterior part drops, so that the surface, normally superior and horizontal, becomes anterior and vertical. . . . This effect is constant and is found in all, however loose the lacing may have been.”

“On the face that is anterior there exists in most women a transverse depression or gully, more or less pronounced, so marked in some cases that the liver looks almost cut in two. The bottom of this groove is at times whitish in color from thickening of the peritonæum, capsule, and cellular tissue.” In the discussion following the reading of this paper instances were cited to show that a habit of wearing about the waist a very tight cord or belt by men will cause like furrows, and that such fissures may result in more or less complete detachment of portions of the organ.

Indeed, Braun asserts that “it is open to proof that the form of the liver is not an independent one, but

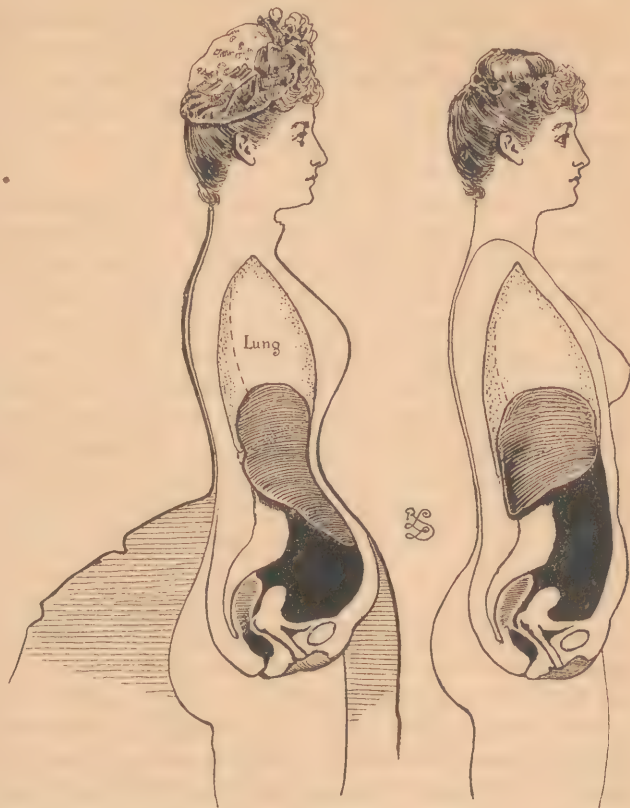


FIG. 17.—The tilting of the liver in certain cases of tight lacing. How the furrow of Fig. 6 is produced.

varies with the pressure and volume of neighboring organs; so that in a normal condition it must possess a softness of structure which can be compared with fat and connective tissue, and which yields to the movements and change of position of the organs in contact with it.”

I am the more inclined to believe this on account of the exceeding great blood supply of the organ. It is said to contain about one fourth the blood in the body. This peculiarity would allow of very marked fluctuations in size and in shape. The very distinct fall of the mercury column—one half to one inch and a half—twenty seconds after hooking the corset may be due in part to the liver emptying itself of blood.

The earlier corsets are worn, the more the liver would be affected, since it is proportionately much larger in the child than in the adult. Previous to puberty its weight may be as much as one thirtieth, or even one twentieth, of that of the entire body; in the adult it averages one fortieth.

“The practice of tight lacing,” says Murchison, “may cause displacements and malformations of the liver which may simulate enlargement and which are of considerable importance in diagnosis. Tight lacing may act on the liver in three ways—according to the situation, the tightness, and the duration of the constricting cause.

“a. The liver may be displaced upward or downward according as the pressure is applied below or

above. The precise situation where the pressure is applied will vary with the prevailing fashion of dress; but most commonly in this country the displacement is downward, and this may be to such an extent that the lower margin reaches the ilium, and the liver appears to fill up the whole of the right side and front of the abdomen." [Frerichs and other writers speak of this amount of change in location.]

"b. In consequence of lateral compression the liver may be elongated in its vertical diameter so that a larger portion of it is brought into apposition with the abdominal and thoracic walls. This is a very common result of tight lacing" (Figs. 6 and 17).

"c. When the pressure is exerted by a tight cord, it may produce deep fissures in the substance of the liver, as the result of which portions of the organ may be more or less detached, and may even be felt as movable tumors through the abdominal parietes."

"Apparent enlargements of the liver from tight lacing are far more common than is generally believed."

Though it is somewhat of a repetition, I must give an epitome of some thirty autopsies that Engel reports:

The lower edge of the liver, he says, is often displaced below the iliac crests. It is nothing unusual to find the fundus of the gall-bladder at the level of the crest. The furrow is often a hand wide. It rarely runs into the left lobe. The portion of hepatic tissue connecting the two parts is scarcely over a finger's breadth. Not seldom scar-like bands and obliterated vessels of large caliber traverse the isthmus. Yet adhesions at this point are of the rarest occurrence.

Above the furrow, in the upper division of the right lobe, which is often much thinned from pressure, one sometimes encounters two deep indentations which run from behind obliquely or directly forward. In these the peritonæum and underlying hepatic tissue are normal.

The portion below the transverse groove may be thicker than that above. Its lower edge is blunt and rounded. Behind, it is strongly concave.

The ligamentum rotundum is displaced to the left. These changes are shown in Figs. 6, 7, and 17.

If, from the testimony of these five observers—Braun, Corbin, Engel, Frerichs, and Murchison—the extreme mobility of the liver has been proved, although we grant that these extremes result from tight lacing, are we not justified in believing that even a loosely adjusted corset must definitely displace so mobile an organ? The difference between the loosest corset and the tightest is less than might be imagined. I have not been able to double the pressure on requesting a patient to lace her loose corset to the utmost she could bear.

Engel found the *stomach* displaced in the following remarkable manner: It was shoved to the left. Its long axis, from a horizontal or oblique direction, was changed to a vertical, so that the lesser curvature ran down directly to the left of the spinal column. The pyloric end

was depressed as far as the fourth lumbar vertebra. Constriction not unlike the liver-furrow was occasionally met with, but without pathological changes in the walls. The *pancreas* may be dragged down to a perpendicular position on the face of the vertebral column, reaching down to the promontory. These were extreme cases, of course.

A few of the most palpable changes brought about by corset-pressure have thus been briefly described. There are many others as much more important as they are more subtle and difficult of proof, such as the disturbances of abdominal circulation, the effect on digestion, the limitation of exercise, and the slowly increasing action on the general health—questions of disturbed physiology which I hope to attack in the future. The necessary observations accumulate slowly. The conclusions reached at this time may be tabulated as follows:

Conclusions.

1. The maximum pressure at any one point was 1.625 pound to the square inch. This was during inspiration. The maximum in quiet breathing was over the sixth and seventh cartilages, and was 0.625 pound.
2. The estimated total pressure of the corset varies between thirty and eighty pounds—in a loose corset about thirty-five pounds, in a tight corset sixty-five pounds.
3. Within half a minute after hooking the corset such an adjustment occurs that a distinct fall in pressure results.
4. The circumference of the waist is no criterion of tightness. The difference between the waist measure with and without corsets gives no direct clew either to the number of pounds pressure or to the diminution in vital capacity. Relaxation and habit seem to affect these factors largely.
5. The capacity for expansion of the chest was found to be restricted one fifth when the corset was on.
6. The thoracic character of the breathing in women is largely due to corset-wearing.
7. The thoracic cavity is less affected by the corset than the abdominal.
8. The abdominal wall is thinned and weakened by the pressure of stays.
9. The liver suffers more direct pressure and is more frequently displaced than any other organ.
10. The pelvic floor is bulged downward by tight lacing one third of an inch (0.9 cm.).

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THE IMPORTANCE OF LOCAL TREATMENT IN DIPHTHERIA.*

By WILLIAM PORTER, M. D.,

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It is not needed that mention should be made in this association of the wide prevalence of diphtheria or of the great fatality attending it. Neither would I be thought to assert that local treatment is the most important part in the conduct of this dread disease. Surely it were better to entirely lose sight of local requirements than to be lacking in that care and alertness needed in the successful general medication of each case.

The thought I would present here is that efficient local treatment is always indicated in the early stages of the disease, and often of avail in the more advanced complications. It is to be regretted that the physician is not called sooner in many instances. Often not until the system is profoundly impressed by the diphtheritic virus is he summoned, and then asked to combat, not an incipient fire, but a conflagration rapid in its advance and destructive in its tendency.

First of all, I believe that diphtheria is in its attack a local disease, most prone to invade a mucous membrane denuded of its epithelium. How the specific poison first finds a foothold we know not, but probably a direct contact is quickly followed by growth and absorption. As in the well-known phenomena attending successful vaccination, the systemic infection is quickly followed by increased local disturbance and exudation, most likely at the point of the primary infection. This new development, the false membrane, in its turn becomes a distributing center for all parts of the system.

If it were possible to antagonize the attack at the beginning, when the diphtheritic impression is first received, the problem of cure would be easily solved. And here let me say parenthetically that I believe it is good practice to use, frequently and thoroughly, astringent and antiseptic sprays and applications with children who may not show evidence of diphtheria, but who are or have been exposed to it by living in the same house, or are in any known way in the line of invasion. Just as an intact mucous membrane completely

covered by epithelial scales may be securely protected from attack, so I hold that, in cases where a denuded membrane offers an invitation for the ready reception of the diphtheritic germ, we may afford an artificial protection, or by proper means destroy an already present foe.

Yet it is not of prophylaxis that this essay is to treat, but of efficient conduct in cases where the disease is present. These conditions exist: 1, a local specific inflammation; 2, a general septic condition, at first caused by, and afterward aided by, absorption from this local inflammation.

While many eminent practitioners depend upon general medication, and some have quite abandoned all forms of local treatment, it is evident that all indications are not met unless attention is given to the local manifestations of diphtheria. If the disease is of local origin, if the systemic infection is constantly receiving fresh re-enforcement by means of the ready absorption of the specific poison—aid the system by all means to throw off the incubus of infection, but also limit if possible the further supply.

How shall this best be done? This depends upon the amount of local progress. I do not hesitate to say that I have seen a local diphtheritic exudation melt away in three or four days under proper local applications, the system being at the same time well guarded. But were these true cases of diphtheria? This much in affirmation: Several of these of which I speak were in families where one child had just died from diphtheria, where the symptoms were all indicative of diphtheria, and where there had been every opportunity for infection.

An old cry is that a physician who professes to conduct his cases of diphtheria to a favorable termination is an alarmist, and his cases are simply follicular amygdalitis. Such a pitiable antagonism is unworthy a scientist. Mistakes do occur, and it is better they should be on the safe side; but I am willing to call a case diphtheria where I find that the child, having been exposed to the contagium, has anywhere upon the mucous membrane of the upper passages a thick, continuous yellow exudation, closely adherent to the mucous membrane, with a tendency to necrosis and sloughing, especially if the pulse is quick and weak and the temperature above normal. It is possible that such a case is not diphtheritic, but it is not probable, and we deal with probabilities. The differences in local appearance and general condition between a follicular exudation and the characteristic false membrane of diphtheria are usually so marked that the physician need not be mistaken, and if he does err, let him give the child the benefit of the doubt.

Beyond this class we have another or advanced degree of the same class in which there can be no doubt as to the type of disease. We find it when called two or three days after the first attack. No longer is there now a small patch confined to the tonsil, or to a small part of the pharyngeal wall or soft plate. The natural

*From the "Journal" for November 19, 1887. Read before the American Laryngological Association, at its ninth annual congress.

guardians of the child have slept and the insidious enemy is in full possession. A dense dirty-yellow and sometimes disintegrating exudation is found closely attached to the natural tissues in some places, and in others hanging in loose shreds, while the naso-pharynx is filled with detached portions of membrane, retained mucus, and sometimes blood, and poison from this septic hot-bed is being rapidly absorbed and carried to the most remote parts of the little frame. Each of these classes of cases demand special and distinct local management.

Let us consider the first class, where the membrane is yet small in extent and of recent formation. Can we close the portals of the absorbents and render the existing local focus of disease inert? After experimenting with many formulæ, I have for several years renewed my confidence in the mixture of equal parts of glycerin and tincture of chloride of iron. The more fashionable and really excellent practice of using bichloride of mercury provides for antiseptis, but not for the equally important matter of astringency. But little manipulation is needed in these early cases. A cotton-covered probe is by far the best instrument, and with it the solution is not merely brushed over, but pressed against, the point of attack. There is no necessity of hurting the child if care is taken, but, on the other hand, I retain a vivid picture of the good old doctor, conscientiously bound to do something, his spectacles awry, plunging a "swab" at random down the throat of a kicking child, or through the clinched teeth, scraping the mucous membrane from the roof of the mouth by the good help of the ubiquitous tablespoon. By proper tact the application may be made easily, and, if it is repeated frequently—*i. e.*, every two hours—its efficiency will soon be demonstrated.

In the more advanced class of cases much more than this is needed. The extent of false membrane is greater, it is more difficult to reach, and the upper respiratory passages are obstructed. First, all of the detached membrane and *débris* should be removed by the syringe, and there is no better method of doing this than that described by Dr. Jacobi in the discussion following Dr. Billington's able paper on "Local Treatment in Diphtheria" (*Medical Record*, April 9, 1887). A tepid but weak solution of common salt is an effective cleansing agent, after which a spray of bichloride-of-mercury solution can be used. The spray should be used warm, and to protect the nostril I often pass over the end of the spray-tubes a small piece of rubber-tubing and roll it up, so as to fit the nostril fairly well. There is no use in attempting to employ the more direct and potent applications by means of the probe in these cases. Many other agents have been used by spray and inhalation or insufflation, such as carbolic acid, lime-water, weak solutions of iron, etc. These are useful, but time forbids speaking of all.

When there is great irritation from laryngeal involvement—if the exudation is not too great—the vapor from slaking lime often gives relief.

I should greatly exceed my limit of time did I at-

tempt to discuss the relative value of tracheotomy and intubation. The opportunity is given, however, to call attention again to what I believe to be an important addition to the ordinary procedure in tracheotomy—*i. e.*, to fill the larynx above the artificial opening with a pledget of cotton or small sponge saturated with an antiseptic solution, to prevent, if possible, the extent of the local disease by continuity of surface.

Let me repeat these thoughts: 1. Diphtheria is in its incipency a local disease. 2. Local treatment is important, an aid to, but never a substitute for, the careful general medication and care. 3. The exact means used in local treatment may not be important, but the end to be accomplished is the speedy sterilizing and disintegration of the diphtheritic exudation, without injury to the adjacent tissues. 4. The local treatment must be conducted promptly, persistently, and carefully.

2830 LOCUST STREET.

ASEPTIC PRECAUTIONS IN PRIVATE OBSTETRIC PRACTICE.*

By JAMES P. MARSH, M. D.,

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THE desirability of strict aseptic precautions in hospital obstetric practice may now be said to have been completely demonstrated, but as to how far like precautions can be followed by the majority of the profession in private practice is still a subject for speculation. The number of physicians who have a regular aseptic treatment for all their private obstetric patients is very small, and this number does not appear to be materially increasing. Nor shall we be able to reduce the number of cases of puerperal fever to a minimum until every physician has made it an article of the obstetric creed that every case of this disease which occurs in his or her practice is an evidence of some want of care, or of defective precautionary measures on his or her part. It may be that occasionally we should have to look far to find our oversight; and be it granted, for the sake of argument, that there is a puerperal fever *sui generis*, nevertheless, should we found our precautions on the theory that we were *always* personally responsible for the disease, and that it could have been avoided, it is evident that puerperal fever would soon become as rare a disease as myxœdema.

In considering this question of the aseptic precautions to be followed in the management of ordinary labors, we find that it naturally separates itself into two divisions—namely, as regards normal and abnormal labor—and that in either case we have to consider:

First, the obstetrician;

Second, the woman to be delivered; and

Third, the surroundings of the patient (the environment).

* From the "Journal" for November 26, 1887. Read before the Medical Association of Troy and Vicinity, November 1, 1887.

Firstly, then, we turn our attention to the obstetrician himself. In these days of enlightenment it is only the man who is by nature clean in all his habits who may expect success in either surgical or obstetric practice. There are times in the conduct of special and exceptional cases of childbirth when the practitioner in charge attempts to use aseptic or antiseptic precautions, which, it may be added, usually prove futile, simply because, with him, aseptic treatment of ordinary cases has never become a habit. He fails of protecting his patient from sepsis, as most men do with anything on the first trial, and ever after has no faith in asepsis. To such men the occurrence or the non-occurrence of puerperal fever is a matter of "luck." They have failed to comprehend the fact that asepsis and antiseptics must be, with every accoucheur, a habit of the mind and body before he will meet with that unfailing success in practice following upon the aseptic treatment of the parturient woman. Again I repeat that he only is a competent aseptic accoucheur who is one without ever especially thinking of it; who from long practice adopts every precaution in its due order.

Many times practitioners have been told that they must not attend cases of labor immediately after coming from autopsies or cases of contagious disease, and yet how many are there that pay any heed to these instructions? Time after time they stand by the bedside of a woman dying of fulminating puerperal fever, carried to her directly from the operating-table where an operation, without any antiseptic precautions, has been done upon gangrenous tissues; and yet no glimmer of light illumines the sable darkness of their minds, no mortality of their lying-in patients is so great as to stir them to seek the causes of the disease and its prevention; but, still plunged in a Stygian abyss of conservatism, they go home to damn their luck and to poison the next woman whose malign fate places her in their hands.

But, whereas there are many who change not even a coat before going to a case of labor after coming from a case of contagious disease, there are a few who have a special coat for confinement cases, which they have thus used for years, and consequently, from the amount of blood and amniotic fluid contained on it, the coming of the doctor is known from afar off. If the practice of the one is reprehensible, how much more so is that of the latter!

However, of all points in regard to himself, the accoucheur must pay most attention to his hands. It is no exaggeration when I say that the most important instruments in my obstetric bag are a nail-brush and a cake of Stiefel's "sublimate soap." To me it seems evident that these two articles ought to be the first *instruments* procured by every person who proposes to practice obstetrics. Having arrived at a case of labor, unless there is special urgency, the first thing that should be done is to thoroughly scrub the hands and the arms as far as the elbows with the brush and a suds made from the "sublimate soap." After this has been per-

formed, by the aid of a penknife the finger-nails should be freed, both above and below, from any particles of dirt which may have escaped the brush, and then the hands ought to get another scrubbing. By way of digression it may be mentioned that all the nails, excepting the one on the index finger of the right hand, ought habitually to be worn short. As regards the exception referred to, I find that many physicians leave this nail long to aid in rupturing the membranes, but I have found that the length of this nail may be materially shortened without interfering with its utility by leaving the corner of the nail toward the thumb sharp and training it to form a right angle. Having cleansed the hands, the question arises as to the lubrication of the examining finger. It is my custom to keep on hand a dozen tin boxes holding about half an ounce of carbolyzed vaseline (5 per cent.), one of which is opened for each case, and not used in any subsequent one. This aseptic vaseline I use for lubricating purposes, and I deem it an important point in the aseptic precautions. And here let it be remembered that there should be no more examinations made than are absolutely demanded in order to ascertain the presentation or further progress of the labor. The more frequently the examinations are made, the greater the liability of infection.

Having said so much in relation to the obstetrician himself, and remembering what I consider to be the truth, that ninety-nine per cent. of the aseptic precautions are to be directed toward the physician himself and the nurse, and only one per cent. to the person of the lying-in woman, we will now glance at the third division of our subject—the environment. However much we might desire it, it is scarcely practicable to prepare the lying-in chamber as we would a room for a laparotomy. This much we can and ought to insist upon—namely, that all the bedding and clothing of the patient be scrupulously clean; also that all persons not directly necessary as assistants to the obstetrician be excluded from the room. I congratulate the profession that the day has gone by when a woman was allowed to lie for three days in the midst of the discharges which had taken place during the labor, but I at the same time call attention to the fact that nurses, if left to themselves, are not apt to cleanse the mother properly. I make it a point to superintend this cleaning-up process, for if I do not I almost invariably find my patient neglected, or some improper article, as a sponge for instance, brought in contact with her person. Frequently one could wish the surroundings of his patient to receive more attention, but it will not be possible until the laity have been educated to its importance.

Now a few words on the second division of our subject—namely, that which pertains to the mother herself. In private practice it will not be found to be practicable to wash out the vagina with a carbolic injection antecedent to labor, and after delivery it seems hardly necessary unless the labor has been very tedious or instrumental. I say that it is unnecessary, for I conceive it

to occur but seldom in private practice that the organisms which produce puerperal fever are present in the vagina of the woman antecedent to delivery, but that in fully ninety-nine per cent. of cases the morbid germs are conveyed to her by the hands or instruments of the accoucheur or nurse. Then shall we take no precautions to protect the woman from sepsis after delivery? This question is important, and I have answered it as regards my own practice in this manner: After the woman has been properly cleansed I am in the habit of separating the labia and blowing into the lower part of the vagina and upon the pudenda about 3 ij of iodoform by means of a powder-blower, which I carry in my bag especially for this purpose. Since adopting this practice I very rarely have observed any increased temperature on the third day, and it is seldom that there is any odor to the lochia at any time during the lying-in period.

When, however, the delivery has been instrumental, I deem the immediate syringing out of the vagina, with a solution of either mercuric bichloride (1 to 1,000) or carbolic acid (1 to 40), of prime importance. This leads me to say a few words as regards the care and use of the syringe. I understand that it is the custom of most practitioners to rely upon finding a syringe at the house of the patient, and that hence they do not carry one in the obstetric bag. Of all the obstetric paraphernalia, the syringe, it seems to me, is the one most likely to convey infection, and the custom of giving the vaginal douche through a syringe that has been used for the purpose of giving rectal injections to be highly reprehensible. My custom as regards the care of the syringe is to place about 3 ij of iodoform in the box containing the syringe, and never to use the same syringe on another patient until it has been thoroughly cleansed in a solution of mercuric bichloride. Consequently I have found it advantageous to have several syringes, and when one has been used to set it aside to be cleansed and to place another in my bag, which, having disinfected myself, I know to be aseptic. If at any time during the lying-in period any syringing is found to be necessary, let it be a settled obligation that the physician is to do it. I should as soon think of handing my forceps to the nurse with directions to extract the child as to hand her the syringe with instructions to give the patient a vaginal douche.

THE TREATMENT OF URETHRAL INFLAMMATION IN THE MALE.*

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It is not the object of this paper to introduce any new line of treatment for urethral inflammation, as is so much the present fashion, but rather to give some per-

sonal experience in its management by methods already before the profession.

To read the reports of cases treated by new methods, and note the patients' rapid recovery, one would think that perfection was at last almost reached, and that all the older lines of treatment for this disease would soon be looked upon only as curiosities in therapeutics. True, some of the older modes of dealing with urethral inflammation should be, and some of them have already been, very properly abolished; but the same may be said of some of the more modern.

Why an apparently conscientious physician can report almost invariable success with a mode of treatment that another, who is an equally good and careful observer, fails to secure anything like the same results with, can, to the writer, only be explained on the ground that the first report was founded upon a too limited number of observations, and that the physician was fortunate enough to have a majority of those cases which get well quickly by attention simply to urethral hygiene—in other words, that the patients made, in many of such cases, a prompt recovery in spite of the local treatment adopted, and not because of it.

The statement of Cheyne, that iodoform in suppositories and eucalyptus-oil by injection will cure gonorrhœa in from seven to ten days, has not been verified by the experience of others. Pasqua cures gonorrhœa in eight to ten days with injections of chloral, one gramme in eighty grammes of rose-water; and Castellan alleges speedy recoveries from the use of a one-per-cent. solution of bicarbonate of sodium. But the average surgeon does not meet with so much success.

Perhaps the most remarkable statement of any that I have yet seen is that of Tinsley, who asserts that he can cure acute gonorrhœa in from twenty-four to forty-eight hours by using, four or five times daily, an injection of sulphate of morphine, 3 j, in rose-water, 3 j. I was led to try this injection in one case, and kept the patient in bed to watch its effect; but by the end of the second day he was worse than before treatment, and I desisted. But, without wasting more time on things that are not always what they seem to be in the eyes of their advocates, let me proceed with the task proposed in the beginning of this paper.

If we admit the existence of a gonococcus as the contagium of gonorrhœa, we must, contrary to the teaching of Bumstead and others, admit the existence of two distinct varieties of urethral inflammation; for, while most observers profess to have found the gonococcus in the pus in cases due to contagion, they have failed to find it in the discharge in cases of urethritis that were due to instrumentation or contact with simple irritants. Whether future observations confirm, or not, the assumption that there is a specific form of urethral inflammation of which the germ is the gonococcus, in addition to a simple variety in which such germ plays no part, the fact remains that, clinically, we meet with severe and with mild cases, dependent upon different causes, and it is of importance to discover the

* From the "Journal" for December 3, 1887. Read before the Medical Society of the County of Kings, September 20, 1887.

nature of the cause in each, so far as we can, in order to direct our treatment intelligently.

We should not only endeavor to learn the nature of the exciting cause, and the previous history of the case, but should inquire into the general health of our patient. Scrofula, rheumatism, and gout are generally accepted as predisposing causes, and are believed to influence the duration of the disease materially. Yet complete and prompt recovery occurs so frequently in this class of patients when the diathesis, whichever it may be, is well marked, and cases are often so prolonged in those apparently in perfect health and free from such diatheses, that it would seem as if their influence had been overrated.

Where, however, the patient's condition is such that his urine is over-acid, or loaded with urates, or with any other excretion in excess that may act as an irritant to the urethra during micturition, there we have ample cause for a protracted gonorrhea, unless such abnormal condition is discovered and removed. For this reason occasional examinations of the urine should be made during the course of every urethral inflammation.

As a general thing physicians are too lax in laying down rules for their patient's guidance. An injection and some copaiba, with perhaps an alkali, are too frequently prescribed as routine treatment, but little being said on the subject of diet, rest, and freedom from sexual excitement. The avoidance of alcoholic drinks should be insisted upon, not only during the acute stage, but, in the majority of cases, throughout the course of the disease, and for some time after apparent cure. Coffee and strong tea, cocoa and lemon-juice, should be prohibited. Although lemonade is allowed by so high an authority as Zeissl, it is harmful, as I have often proved to the patient's satisfaction as well as my own. Even the ingestion of strawberries has often caused a return of smarting on urination, so they had best be avoided. Asparagus, celery, pickles, and condiments are on the list of forbidden things. During the acute stage, meat, which, besides its stimulating effect on the sexual organs, tends to increase the acidity of the urine, should be left out of the patient's diet, and farinaceous food substituted, especially in those of full habit. Milk, when it agrees, is an excellent diuretic, and a good substitute for meat.

Having taken the patient's history, given him explicit directions about his diet, urged him to take as much rest as possible, and to avoid everything tending to produce sexual excitement, we should next consider what medicinal treatment is indicated. This will depend not only upon the stage and severity of the disease, but upon the constitution and temperament of the patient as well. The line of treatment that succeeds best with the healthy, vigorous man, with the sexual instinct strongly developed, is not the best for the man who is his physical and mental opposite. In the first case, salines and bromides are generally highly useful; in the second, these remedies are less productive of good, and oftentimes decidedly harmful.

Where we have to deal with an acute case, the treatment for the first few days should be, in a measure, antiphlogistic. The extent to which this should be carried depends on the severity of the symptoms and the constitution of the patient. Enough of some saline should be given to produce at least two free evacuations daily. For this purpose I prefer sulphate of magnesium or Hunyadi water. The more active cathartics, as advised by some, do not, as a rule, seem to possess any advantages over salines. And it is well to diminish even the saline as soon as the more acute symptoms begin to yield, yet it may be continued in a smaller dose throughout the acute stage with benefit to such patients as are not weak or anæmic. Constipation should always be prevented during the entire course of the disease by some laxative appropriate to the case. While gentle purgation in strong, healthy subjects is beneficial for the first few days, where the symptoms are marked, it should on no account be continued beyond the inflammatory stage, and in debilitated subjects, as a rule, anything like purgation should be avoided from the first.

Opinion is divided as to the use of diuretics in this disease. Ricord taught that the more urine the patient passed the more he "fatigued his urethra" and predisposed it to inflammation, and yet he admits that the greater the amount of urine, the less the pain caused during its expulsion. He therefore chooses the least of two evils, and seeks to render the urine as "aqueous" as possible. Zeissl condemns diuretics as injurious, while Van Buren and Keyes, Bumstead and Taylor, and others, advise their use in all cases.

It has seemed to me that the more active diuretics are entirely uncalled for, and that, in the majority of cases, an abundance of pure water, such as the Hygeia or Bethesda, and perhaps milk or buttermilk, produce all the diuretic effect required. When, however, the urine is over-acid in spite of the administration of such diluents, a mild alkali, such as citrate of potassium, does good when given in sufficient doses to nearly or quite neutralize the urine. The fact that an alkali accomplishes more, and is less apt to disturb the digestive processes, when given two or three hours after meals, is familiar to every physician, but is often not insisted upon by him, and patients take it at their convenience. Any alkali, however, does harm rather than good if it disturbs digestion, as is often the case. A mineral acid will sometimes accomplish more than an alkali in patients with atonic dyspepsia; for if, as a result of imperfect digestion, the urine contains an excess of uric acid, oxalate of calcium, or any deposit that renders it irritating to the urethra, the acid, in certain of these cases, relieves this condition by improving digestion and aiding assimilation. In short, I believe the habit of ordering an alkali for every case of urethral inflammation, as is advised by many good authorities, is not only injudicious, but, in some cases at least, harmful.

Hyoscyamus is usually recommended when smarting on urination is severe. In my experience, small doses of oil of sandal-wood relieve this symptom more than

any other single remedy. I frequently combine ten minims of this oil with two or three grains of extract of hyoscyamus, and give this quantity two hours after each meal. The effect is more decided than when either remedy is given alone. As the inflammatory symptoms subside the dose of the oil can be increased to twenty or thirty minims, and the hyoscyamus omitted.

In some erotic individuals who are tormented with painful erections, full doses of bromide of potassium or sodium fulfill the double indication of alkali and sedative. I generally, however, give the bromide only at bedtime, preferring the above-mentioned treatment during the day.

Of all the internal remedies advised for gonorrhœa, I prefer the oil of sandal-wood. It is less apt to disagree with the patient than either copaiba or cubebs, and can be given earlier in the course of the disease. In small doses it is beneficial even in the most acute cases and while the inflammatory symptoms are on the increase. It is especially useful in cases complicated with cystitis. It seems to be most effective when alkalies are withheld during its administration, and when only a moderate amount of fluid is taken by the patient. The physician should always insist upon the patient taking his dose from an hour and a half to two hours after meals, and not at irregular intervals. It is said that this oil is so apt to be adulterated that it is unreliable, and I find there is considerable difference in the effect produced by that which comes from different sources. I have been led to depend either upon that freshly put up by a reliable druggist or upon the capsules of one or two firms only from among the number represented in the market.

My experience with copaiba and cubebs does not probably differ from that of others. I give them much less frequently in private practice than I do oil of sandal-wood; but, when a case is prolonged, and the oil seems to have lost its effect, I resort to them where they are readily tolerated. It is, however, harmful to push any of these remedies, as is too often done, when after reasonable trial, alone and in combination, they are found to disagree with and disgust the patient. In dyspeptic subjects it is unwise to try copaiba at all, for it will almost always make matters worse. Some surgeons have discarded these drugs entirely, but, while their indiscriminate use is to be condemned, it is certain that they are, in many cases, valuable adjuvants to other treatment, when intelligently handled.

When even the oil of sandal-wood is not tolerated, the tincture of *Cannabis americana* can be given, and will be found a useful remedy. When the acute symptoms have subsided and the discharge has become mucopurulent or mucoid in character, the non-alcoholic fluid extract of hydrastis is of value, especially in debilitated patients with poor appetite and impaired digestion. It is preferable to the tincture of chloride of iron in many such cases as are said to require iron. I have tried various other drugs in this disease, such as digitalis, salicylate of sodium, manzanita, kava-kava, etc., and

have discarded them all except kava-kava, which, in the form of a solid extract, is at times a useful remedy in subacute cases.

In milder cases of urethritis the same general directions as to diet, rest, laxatives, and the avoidance of sexual excitement should be enforced for the first few days, until it is certain that the disease is to prove mild, when we may be less strict as to rest, laxatives may be uncalled for, and the patient may be allowed a more liberal diet. It is well in all cases for the patient to avoid alcoholic drinks and sexual excitement for at least two weeks after recovery.

Local Treatment.—In cases seen within the first few days, while the disease is confined to the anterior part of the urethra and the discharge is yet thin and chiefly mucous, it would seem as if injections of such solutions as are said to be capable of destroying the gonococcus would constitute the all-important treatment. I refer to such weak solutions as are supposed to be devoid of danger to the patient and yet destructive to the gonococcus.

Hitherto such treatment has not been so successful in my hands as its advocates would lead one to expect. Often, while the discharge is chiefly mucous, an injection of a weak solution of bichloride of mercury will apparently produce marked benefit, but I have been disappointed so often with this treatment, and have seen, in many cases, the symptoms increase so rapidly while I was carefully following up such injections, that I have been led to doubt the reputed virtues of the bichloride. We are very often at a loss to determine, especially during the first few days, whether our patient has been actually exposed to contagion and is in the initial stage of a gonorrhœa, or has only lighted up a mild inflammation by drink and sexual excess, which will subside in a few days if left alone. It is therefore difficult to estimate the value of any treatment that is begun on the first appearance of symptoms, and I have been led to believe that many of the reputed successes from the early treatment of urethritis by solutions of bichloride were in cases that would have proved mild and of short duration under very simple measures.

And so much has been said and written of late in regard to injections of bichloride of mercury, in solutions of various strengths applied in different ways, it may not be amiss to speak more at length of this subject. I have tried this treatment in upward of thirty cases with varied results. When a solution of 1 in 20,000 and upward, as the patient could tolerate it, was resorted to, with the same restrictions that should govern the use of any injection, it seemed to be productive of good in all cases, and in some appeared to act better than any other local remedy. Weaker solutions than 1 to 20,000 have not been proved to be destructive to the gonococcus, and should not therefore be relied on, if there is any truth in the assumption that the value of the bichloride in such cases depends upon its action as a germicide. And yet, from the reported cures with this drug, it would appear that solutions of

1 in 40,000, and even 1 in 60,000, were about as effective as the stronger preparations.

Retrojections of the same solution, as hot as the patient could comfortably tolerate, did not give me good results when used early in acute cases. When the urethra was so inflamed and highly sensitive that urination caused pain, patients complained, sometimes bitterly, of the passage of the catheter, although a small, velvet-eyed, and well lubricated one was always used. I persevered for over a week with this treatment in five cases. But I was convinced that it did no good, if it did not do actual harm, and a change of treatment was promptly attended with benefit.

While I was giving such retrojections the catheter was so tightly grasped by the urethral walls in three cases that the solution would not flow, no matter how high the irrigator was held. I overcame this difficulty by momentarily closing the meatus around the catheter as soon as its eye was well within the fossa navicularis. The urethra, for the first few inches, was gently distended with warm fluid by this manœuvre, and while it was thus distended the instrument could be pushed onward with less friction and pain, and consequently with less tendency to spasmodic stricture. The same expedient I found useful when withdrawing the catheter. If the solution in the irrigator was allowed to flow out completely, the instrument was again grasped by the urethra, and considerable pain caused by its removal; whereas, by withdrawing it while the solution was still flowing, and thus slightly distending the urethra, pain was reduced to a minimum. If, however, in spite of this precaution, the catheter was still so grasped that any attempt to remove it produced pain, which would sometimes happen in subacute as well as in acute cases, the meatus was momentarily closed around the instrument, as during its introduction. But the urethra must on no account be over-distended, which may readily occur if pressure is kept up for more than an instant, or if the irrigator is held too high.

As an offset to my non-success with this treatment in cases markedly acute, I would testify to the value of retrojections of hot weak solutions of bichloride of mercury, chloride or sulphate of zinc, etc., in subacute and chronic cases, especially in those in which the deep urethra is involved. In several cases of urethritis occurring in patients while under treatment for stricture—such attacks being due to alcohol, sexual excess, and fresh exposure, and not to instrumentation—solutions of bichloride were found inferior to those of lead and zinc.

To return to the consideration of the increasing stage, some one has said that the severer the inflammation, the milder should be the local treatment, and this is a safe rule to adopt. I believe it is still the experience of the majority of physicians that in this stage, while there are much swelling of the lips of the meatus and marked pain on urination, the urethra should be left alone. The best local treatment here is that so highly recommended by Milton: frequent and prolonged

soaking of the penis in water as hot as can be borne. Especially useful is this hot local bath during the act of urination, the pain of which it so much mitigates. General warm baths are also useful; but they should be warm enough to cause relaxation, for a tepid bath has a stimulating effect on some erotic patients, and provokes erections.

When pain on urinating is very severe, and is not relieved by the means already mentioned, injections of a 4-per-cent. solution of cocaine are useful palliatives, if the act of injecting does not cause too much irritation. This brings up the question, When should we begin the use of injections? My answer to that would be, As soon as the good accomplished by such treatment outweighs the irritation produced by the act of administering it.

One of the best injections to begin with, which is soothing and at the same time slightly astringent, is the following:

℞ Pulv. opii 3 j;
Aque destil. bullientis ʒ viij.

Mix, filter, and add

Liq. plumbi subacetat. 3 ss.

This is practically the formula recommended by Van Buren and Keyes for balanitis, but much weaker. I sometimes add a grain of sulphate of atropine to each ounce of this solution, with apparently good effect.

If, however, even the mildest injections appear to increase the dysuria, as they occasionally seem to do when begun early, they should be stopped until the inflammatory symptoms have still further subsided. Injections should always be warm when given during the increasing or early part of the decreasing stage.

As the inflammatory symptoms subside, the solution of lead in the prescription should be increased to 3 j or more, as the patient can tolerate it, always, however, bearing in mind the rule that an injection should never be strong enough to produce pain, or even prolonged smarting.

Of the great number of injections recommended by various authors, most dependence is still to be placed on those containing the salts of lead or zinc. The following is a very useful form of injection:

℞ Zinci sulph gr. ss.-iij;
Extr. belladonnæ gr. j-vj;
Glycerini 3 ss.;
Aque destil. ʒ j. M.

When the patient objects to a colored solution, we may substitute for the belladonna a grain of sulphate of atropine to each ounce of the injection.

In some cases nitrate of silver, in weak solution, answers better than either lead or zinc. I have frequently tried boric acid, chloral, permanganate of potassium, and other injections, but still prefer those above mentioned for general use.

It is maintained that injections are the most frequent cause of swelled testicle. Strong ones have undoubtedly often produced this complication, but I do not believe that this danger exists when only those that do not

cause pain or prolonged smarting are carefully used. Some writers would have us believe that even the mildest injections are capable of causing inflammation of the epididymis, and that such complication rarely or never occurs where this treatment is not resorted to.

In my own experience I have met with more cases of swelled testicle in young men who were afraid of injections, and who depended upon internal treatment alone, than in those who had made proper use of local measures as well. The worst case of double epididymitis that I ever saw was in a patient with his first attack of gonorrhœa, who was treating himself with laxatives and alkalies alone. Some months ago a gentleman came to me with swelled testicle following an attack of urethritis for which he had been treated with internal remedies only. Shortly after the testicle had resumed its normal size he again contracted urethritis of a severer type than the former attack. This, however, subsided in three weeks, without complication, under treatment by oil of sandal-wood and injections. I might cite many other similar cases, but lack of time forbids.

It is generally advised that injections be discontinued if the testicle becomes involved. I do not believe that, when properly selected, they will be any more apt to aggravate this complication than they are to cause it; but, as the discharge usually decreases or disappears entirely during the first few days of an attack of epididymitis, the injection is as well omitted until the inflammation begins to abate.

Gelatin bougies of various medications I have tried and found troublesome to the patient, and not more effective than other measures. In two cases under my care in which the long ones were used, they appeared to excite inflammation of the neck of the bladder, for both patients had attacks of cystitis shortly after their introduction.

For some time past I have been using bougies, each containing boric acid, gr. xv; ext. belladonnæ, gr. ij; ol. theobromæ, $\frac{3}{4}$ ss. A competent apothecary can make this into a bougie of about No. 17 F. in diameter, and three inches long. I have not yet ventured to try them in very severe cases, but have used them in a number of subacute ones with excellent results. The bougie should be introduced after urination, and be retained an hour or more if possible. It must be dipped in oil or liquid vaseline before its introduction. Although this undoubtedly somewhat interferes with its action, too much irritation is produced if the bougie is used without first lubricating it. It requires more care to introduce these than the gelatin bougies, and they are just as troublesome in other respects, so that they can only conveniently be used in hospital cases, and in those private patients who can be induced to take the time required for their proper application. The only really effectual way of retaining any soluble bougie in the urethra is by keeping the meatus closed by lateral pressure with the thumb and finger.

When the discharge has become chiefly mucous, I

find fluid extract of hydrastis superior, in many cases, to the injections above mentioned. The non-alcoholic fluid extract is the best preparation. Let the patient provide himself with a bottle of distilled water, and begin with one part of hydrastis to eight of water, a strength which almost any urethra will bear at this stage, and gradually increase the proportion of hydrastis until a feeling of warmth is felt.

It has recently been stated that the pus in urethritis is acid in reaction, and that a cure is promptly effected by injections of a solution of bicarbonate of sodium. I have not tried this alkaline injection, but have tested the reaction of the discharge in upward of twenty cases, and in all it was alkaline and not acid. It is fair to state, however, that none of these cases were of the most severe type, although inflammatory symptoms were well marked in at least one half the number, and the test was made early in the disease.

A word in regard to syringes. The conical pointed instrument is the one now usually recommended, and is, as a rule, the best for general use; but I frequently meet with a patient having a small meatus, who can use a syringe with a short nozzle more effectively and with less irritation. Such a one, however, should be of rubber, and the nozzle only long enough to just enter the fossa navicularis. The patient should close the meatus above the nozzle, and not press the glans against it. The selection of a proper syringe should be a part of the physician's duty. He should also be assured that the patient knows how to administer an injection; for many who profess to know all about this mode of treatment will completely fail when asked to demonstrate the process. In all cases it is a good rule to have the patient bring his syringe to your office, and show his ability, or inability, to carry out your directions. If he fails, a few lessons will soon give him the necessary information.

Considerable difference of opinion exists as to the quantity of fluid to be used at each injection, and the length of time it should be retained in the urethra. Thompson says that one drachm to one drachm and a half is sufficient to distend the urethra for three inches and a half to four inches, and recommends a syringe of that capacity only. Other authors assert that one holding less than half an ounce is useless. Of the two, the larger is the best for general use, although one holding three drachms is more convenient and large enough for the majority of cases. While not more than one drachm of fluid should be injected early in the disease, when only the anterior part of the urethra is involved and its normal capacity so much diminished by the swollen membrane, later on, three or even four drachms may be required to reach all the diseased surface.

Few patients can be induced to take sufficient time to get the full benefit of an injection. The longer the solution is kept in contact with the inflamed membrane, the greater the benefit, if this prolonged distension of the urethra does not cause pain and force the patient to expel the fluid. This rarely happens, however, unless

the injection is too strong, or the glans is too tightly pressed in the effort to retain it.

The frequency with which injections should be used, and the necessity of occasionally discontinuing them for a day or two, so as to see what the discharge amounts to, uninfluenced by such treatment, are points which need not detain us.

When the patient reports himself cured, it is too often the custom for both physician and patient to relax their vigilance, and in a few days the discharge may return. Far better is it for you to insist on attention to all the rules you lay down for him in the beginning, until at least two weeks have elapsed without the appearance of any discharge on rising in the morning, and for a longer period if the first few drachms of urine passed contain shreds of muco-pus that warn us of still existing trouble. Of course, if this latter condition persists beyond a few days, it will suggest to the surgeon the probable existence of some lesion other than the inflammatory one of which we have been speaking, and he will proceed accordingly. That, however, does not concern us in the present paper, for I have been dealing only with the treatment of inflammation of the urethra without any special reference to its complications or sequels.

ON THE USE OF LIGATURES ON THE LIMBS DURING SURGICAL OPERATIONS.*

By L. M. SWEETNAM, M. D.,

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IN a recent issue of your valued Journal there appeared a very interesting and instructive paper upon "The Effective, Rapid, and Safe Induction of General Anæsthesia," by Dr. J. Leonard Corning—especially interesting to me because I had used the method referred to in my own practice for several years; but first and most extensively I had seen it employed by Dr. W. T. Aikins, a surgeon of Toronto, Canada, who for some eight years has made it a rule, before commencing upon any formidable operation, to have placed upon the patient's limbs—arms as well as legs—close to the trunk, rubber tourniquets—usually large rubber tubing—just tight enough to obstruct the venous circulation, without interfering with the circulation in the artery, and, as far as I know, the idea originated with him.†

Dr. Corning resorts to the use of these tourniquets for the purpose of securing rapid anæsthesia. Dr. Aikins's object was to control hæmorrhage—to save blood—but he very soon discovered that patients came under the influence of the anæsthetic with remarkable rapidity, that the quantity of ether or chloroform used was unusually small, that consciousness returned with

surprising quickness, and that the after-effects were less distressing and much less persistent than is usual under ordinary circumstances.

Dr. Corning says: "To thoroughly appreciate the principle involved, it is necessary to bear in mind that, when we place the ligature about the thighs, so as to control the circulation in both veins and arteries, we enormously cut down the amount of blood actively circulating." We think it better not to make the ligatures so tight as Dr. Corning does, and for this reason, if the constriction is sufficient to obstruct the circulation in the veins only, we, besides cutting off from the active circulation the amount of blood normally found in the limbs, draw off a large quantity from the head and trunk, lowering very distinctly the pressure in these parts. This is secured by the dilatation of the veins under the continued pressure of the arterial stream.

During the past few years, even in the United States, men of high professional standing have ventured to suggest that if reliable statistics were procurable, enabling us to place beside the list of deaths honestly attributable to the use of chloroform—and this, from the suddenness with which death takes place, is prepared with comparative ease and accuracy—that of the deaths as honestly ascribed to the use of ether, including those of persons who linger on for say, from four to fourteen days and die eventually of kidney or lung complications, the popularity of chloroform as an anæsthetic would be very much increased; but, be that as it may, it is admitted on all sides that the use of ether as an anæsthetic in the presence of extensive nephritis or bronchitis is attended with considerable risk to the patient. Now, if in these cases the medical attendant, in spite of these complications, decides to use ether, the application of these ligatures, by lessening the quantity of ether used and hastening its excretion, directly decreases the risk incurred.

A few days ago I was invited by Dr. T. A. Emmet to witness the removal of a large ovarian cyst containing upward of forty pounds of fluid from a woman of sixty-three or sixty-four; she was considerably reduced in strength and weight, and suffered from a ventral hernia with a history of peritonitis, so that the case was not a very promising one. At the suggestion of Dr. Bache McE. Emmet, and with the consent of the operator, Dr. T. A. Emmet, I applied the ligatures; she took the ether nicely, and came under its influence promptly. The cyst was found to be firmly adherent from the umbilicus to the region of the spleen; separation was effected by the use of the sponge, after the method of Dr. Skene Keith. The entire operation occupied rather more than an hour, and the total amount of hæmorrhage would, I am sure, be more than covered by two fluidounces. Dr. Emmet took me to see the patient a week later. Her temperature and pulse were practically normal; in Dr. Emmet's opinion, the use of the ligatures had contributed very largely to her recovery.

The advantages offered are:

1. But little time is lost in securing complete anæ-

* From the "Journal" for December 17, 1887.

† I have recently learned that the method was made use of, many years ago, by the late Dr. A. C. Post, of New York, and perhaps by others.

thetia, and but little in waiting for returning consciousness before leaving the patient, the operation being completed.

2. If the bands are applied ten or twelve minutes before the first incision is made, the operation will be a comparatively bloodless one, and the surgeon works more rapidly and more comfortably than he would if the hæmorrhage were more severe.

3. Saving of blood to the patient.

4. If collapse appears to threaten the life of the patient, the removal of one or more of the ligatures can be relied upon to bring about a prompt reaction.

5. There is less vomiting and distress after the use of the anæsthetic.

6. The small amount of ether or chloroform used, from an economical standpoint.

7. Fewer ligatures and compression forceps are required to control bleeding.

8. Less embarrassment of lungs and kidneys, and lessened risk of serious injury to these organs if diseased.

Precautions to be observed :

1. In cases where there is a history of purpura it is well to exercise care both as to the amount and as to the duration of the constriction.

2. Where there are marked varicosities of the limbs, these should be supported by rubber or flannel bandages.

3. Where there is no contra-indication, inasmuch as the amount of blood supplied to the heart and cerebro-spinal system is materially lessened, the effect may be somewhat depressing, and for that reason ether would appear to be the better anæsthetic.

I have frequently used chloroform with the ligatures, and so far without noting any unpleasant results ; but, whichever anæsthetic is used, the head should lie low, and, if alarming symptoms should develop, I should draw the patient up so that the head would hang over the end of the table, and at the same time loosen several of the ligatures.

4. If the wound, still open, is watched for five or ten minutes after the removal of the ligatures, its color will be seen to deepen very distinctly from the increased quantity of blood flowing to the part. Now clots, which were sufficient to seal effectually the small vessels while the ligatures were in position, may give way under the increased pressure ; in one case, thirty minutes after the removal of a breast, violent hæmorrhage set in, necessitating the reopening of the entire wound to secure the bleeding points. If, however, the bands are removed as soon as the last incision is made, there will be but little risk of any mishap of this kind after the sutures have been introduced and the wound has been securely closed.

5. The constriction may with perfect safety be kept up for two hours, but it is well to keep the limbs wrapped in blankets and thus prevent any serious loss of heat.

THE DANGER OF DELAY IN PROSTATIC TROUBLES.*

By R. D. WEBB, M. D.,
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I do not propose to give a systematic or exhaustive essay upon this subject, nor to enter into the different methods by which relief has been obtained by the knife or electricity in extreme cases. My object will be to point out the dangers of delay, and call attention to the method of dealing with this *opprobrium medicine* in its earlier stages.

As is well known, this trouble is very common. Yet while many suffer from it, and not a few are brought by it to a premature death, a large number, by care and appropriate treatment, may live on to average old age, leading active and useful lives, without being forced to any of the more severe surgical means of relief. It is also known that death in these cases, where the enlargement of the gland is not malignant, is the result of inflammatory action transmitted through the ureters from the bladder to the kidneys, producing nephritis, with suppression of urine and uræmic poisoning, or pyonephritis, with a combination of uræmic and pyæmic sepsis.

Here, *par excellence*, as in many other of the ills of life, *delay* is the great trouble. Either from the fact that virtuous, moral men naturally shrink from making known the derangements of the generative organs, or from the fact that the trouble is slow and insidious in its approach, it is overlooked, or borne with long before medical aid is sought. Said a medical friend to me when speaking of these troubles of the generative organs, "If it were the arm it would not be so bad ; we could then speak of it to others ; but to be forced to secretly bear the trouble renders the annoyance doubly severe." Or it may be ignorance upon the part of the patient of the nature of the disease which threatens his life ; or, possibly, that his medical attendant does not sufficiently early recognize the trouble and fully appreciate the danger of delay, and hence does not sufficiently warn his patient, or resort with the necessary persistency to the means of relief.

The result of this delay was strongly impressed upon me in my early medical life by my first case of prostatic trouble.

The patient, a high-toned old Virginia gentleman of seventy years, too proud and self-reliant to speak of the ills of his generative organs, had suffered this trouble to gradually encroach upon him until he was reduced, by the frequent painful effort at relieving the bladder, to a state of general debility. He did not then ask for medical aid until complete retention forced him to it. I found him with the distended bladder reaching almost to the umbilicus, and suffering severe pain from the retention and an inflamed bladder. With difficulty to myself and much pain to the patient, I passed a catheter and relieved the

* From the "Journal" for December 24, 1887. Read before the Alabama Surgical and Gynecological Association, October 13, 1887. Communicated by Dr. W. E. B. Davis, of Birmingham, Ala.

bladder of the accumulated urine, which was ammoniacal and highly offensive. But the inexperience of youth led me into an error which I should now avoid: I drew off at once the entire amount of urine. The result was, as often happens when a largely distended bladder is suddenly emptied, a depression of the patient, followed by increased trouble of the bladder, already irritated to the point of inflammation. For a few days the urine was heavily loaded with muco-pus; pyo-nephritis, suppression of urine, and death soon followed.

Probably the kidney was already involved; but this depression seemed to hasten the death of the patient. Here the practice should have been to relieve the bladder only in part of its urine—about two thirds—and at the same time to have thrown into it a quantity of warm antiseptic fluid until it was refilled again to about three fourths of the state of distension. After the lapse of an hour, one half of this should have been drawn off, refilling the bladder again with the antiseptic fluid to about one half the state of distension, and then in half an hour or an hour to have completely emptied the bladder, washed it out with an antiseptic fluid, and left an ounce or two of this fluid in the bladder. In this way the shock to the system caused by the too sudden emptying of the bladder would have been avoided, and the danger of increased inflammatory action lessened.

The danger of delay in hypertrophy of the prostate is well pointed out by Dr. Gross in a clinical lecture before the class of young men in the University of Pennsylvania. After describing the case and emptying the bladder of its urine (there was no retention), he said in substance: "This patient has an enlarged prostate, with inflammation of the bladder. We may probably relieve the cystitis by appropriate treatment, unless the inflammatory action has extended to the kidneys. In that event the prognosis is very unfavorable."

This remark tells plainly the dangers of delay. The patient may be able to bear with the annoyance of frequent and difficult micturition for months, and suffer secretly the severe pain and straining to relieve the bladder, even to the extent of chronic cystitis with some chance of relief, but if he delays until the kidneys are involved, the "prognosis is very unfavorable."

A second case, which also occurred some twenty years ago, teaches the same lesson:

I was called to see a negro man of sixty-five or seventy, of remarkably stalwart frame. He was six feet two inches high, with large bones and powerful muscular development. He had been a sufferer for years from the insidious approach of prostatic enlargement, but, through ignorance of the inevitable result of delay, and disdaining, in the pride of his manly strength, to succumb to such a trouble, he bore with the annoyance until it told upon his herculean frame and stretched him an invalid upon his bed. In this condition I was called to his aid. I found him emaciated, with his strongly marked features wearing an expression of long-resisted pain. On inquiry, I learned that he had been for over a month in his bed, suffering, as he expressed it, from "gravel," an invariable name with the negro for all the ills of the bladder. I could at once detect the odor of ammoniacal urine. On examination, I found him with the penis in an open-mouthed bottle to catch the urine as it overflowed from

the bladder. The scant secretion of urine was highly ammoniacal, and loaded heavily with muco-pus; and a microscopic examination of the urine revealed the ravages of diffused nephritis. He was beyond medical aid. In a few more days suppression of urine, with uræmic poisoning, brought to a close the life of this robust and stalwart man.

Here ignorance of the real danger had caused the delay which resulted in death. With his physical strength and good constitution, fourscore, instead of threescore and ten, should have been the length of his days.

But there is yet a third class of delays. The condition of the patient is not realized by his medical attendant, and may be masked, so to speak, by other ills which may mislead the attending physician, and cause him to believe he has found the basis of the trouble in other organs; and, thus flattering himself, he neglects to inquire into the urinary troubles with sufficient detail. This the more readily occurs in the better class of patients, where there is a natural reserve upon the part of the patient to reveal his trouble; or, as Dr. Bangs, of New York, has pointed out, even to resent what he considers unnecessary inquisitiveness. The doctor under such circumstances is especially apt to omit the crucial test of a rectal examination.

A case of this character fell into my hands where the patient had been seen by several of the first physicians of the county, and his trouble variously diagnosed as heart disease, hepatitis, chronic cystitis (correct to a certain extent), and even as hypochondria; but to no one of them, not even the one who diagnosed the chronic cystitis, did it occur that hypertrophy of the prostate was the real cause of the trouble; and he was suffered to linger on and battle unaided with the disease for another year. At the expiration of this time I saw him. He had been an invalid most of this time, but being of good constitution, had stood well his constant suffering; but I learned that within the last ten days he had gone down perceptibly, and he was now confined to his room, and most of the day to his bed. The evening before I saw him he had a rigor and severe pain in the region of the kidneys, followed by slight febrile excitement. He was now quite feeble; pulse 110, temperature 101°.

I could detect here, too, the urinous odor, and, on inquiry, found that he was having stillicidium whenever the urine accumulated in his bladder during sleep. While awake he passed his urine every hour or two, which prevented distension. There was decided tenderness on pressure over the hypogastric region. My mind at once adverted to hypertrophy of the prostate as the cause of his trouble. I learned that the passage of the urine had for several years been gradually growing more difficult and more frequent, and that now the calls to pass the urine were every hour or two, attended by painful straining and tenesmus of the rectum.

I at once proposed a rectal examination, from which at first he shrank, both from a natural modesty and from the fear of pain. I told him kindly, yet firmly, that it was absolutely necessary to a proper diagnosis of his case, and assured him the pain would be trifling. He reluctantly consented, and, on examination, I found the prostate enlarged to the size of a turkey's egg, but flattened and broad, the so-called middle lobe not being enlarged to an equal extent with the lateral lobes. This accounted for his ability to still pass his urine without the use of the catheter.

I informed him frankly of the cause of his trouble, and told him my proposed treatment—viz., the use of the catheter to draw off the residual urine, with daily irrigation of the bladder. At this visit, however, I refrained from the use of the catheter on account of the inflamed condition of the bladder, and directed a saline purgative, with salicylate of sodium.

The next evening I introduced, without difficulty or pain, a Benas gum catheter just after he had urinated, and drew off nearly an ounce of residual urine of disagreeable, ammoniacal odor, and by means of a two-way stop-cock and a Davidson syringe irrigated the bladder with a solution of glycerin and essence of gaultheria in warm water. It was very grateful to the patient, and he had a better night's rest than for several nights, not having to be up so often to relieve the bladder. But my patient was still growing more feeble, though we endeavored to sustain him with liberal diet. He had both to day and last night rigors, with pain in the left side in region of the kidney. The next day the quantity of urine was less, and it was loaded with muco-pus. Microscopic examination revealed the presence of nephritis. The secretion of urine grew daily less and less till it amounted, after a week, to only twelve ounces in twenty-four hours, heavily loaded with pus. Semi-coma supervened, and in thirty-six hours more he had passed away.

Here was a valuable life shortened, no doubt, by a want of timely attention and remedies directed to the real condition. His medical attendants had been deceived by other indications, and his aversion to treatment had caused him to delay too long.

But the inquiries arise, How do these troubles commence? How are we to become aware of the danger? and How can we avoid it? In answering these questions I will continue the somewhat clinical style of this paper.

At from fifty-five to sixty, rarely as early as fifty, there is a slight prolongation of the time of passing the urine. There is no pain, no difficulty, only a prolongation of the time of emptying the bladder. It scarcely attracts the attention of the patient, and he goes on in his usual habits, giving himself but little concern about it. In a year, or probably two years, it becomes more perceptible, and at some time when he has been exposed on a cold, damp day, and has suffered his bladder to become somewhat fuller than usual, he finds considerable difficulty in voiding it, possibly attended by a sense of fullness or slight pain in the perinæum. A return to the warmth of home and a warm pediluvium at night give relief, and, unmindful of the warning, he goes on as before. But he soon finds that the desire to urinate is becoming more frequent, and relief of the bladder becomes more prolonged, and begins to be attended by some straining effort and pain, which is not infrequently referred to the glans penis. He still is not alarmed at his condition, and disregards it. Another year is passed. He is now *annoyed* by the frequency of the calls to relieve the bladder. He is called up frequently at night for this purpose, and, if he is now exposed to cold and damp weather, he relieves his bladder with difficulty, and often he finds the act followed by a few drops of blood, or a prolonged exposure may cause a more decided congestion of the parts and retention of urine, which is not relieved until he is thoroughly

warmed in his bed or has taken a warm bath. Like most men, he dreads the catheter, even if it occurs to him as a means of relief, and he still neglects or refuses to seek medical advice.

The trouble now becomes more pronounced. The patient is constantly annoyed by calls to relieve the bladder by day and by night. His urine is passed only after severe straining attended by tenesmus of the rectum, and frequently with loss of blood. He is annoyed by the idea of stone in the bladder. The case has now reached a point at which medical advice is sought, but, with the idea uppermost in his mind that he has stone, or simply cystitis, he may mislead an unsuspecting physician. Now is the time that aid must be had, or soon the bladder, columnated and thickened by its abnormal muscular action, will force the urine, impeded in its outward exit, to flow back through the ureters, causing them to enlarge, and eventually result in disease of the kidneys. Once this chronic inflammatory condition of the bladder is fully established, and the ureters are enlarged by the reflex action of the bladder, the case is serious, it is but a little way to nephritis and death, and the boldest surgical measures are justifiable means of relief. The Mercier operation (or punching, so to speak, an artificial urethra through the obstructing gland), which its inventor alleges to have been wonderfully successful in his hands in Paris, has not been popular here or in England, but may now be resorted to. Dr. J. W. S. Gouley, of New York, has performed it successfully in eight or ten cases, but I saw in his collection of pathological specimens the bladder of a patient (a brother doctor) who had submitted to this operation at his hands. He is now more cautious, and hesitates to operate by this method in cases where the obstructing bridge or bar exceeds an inch in thickness. Gouley, Gross, Thompson, and Gant have resorted to perineal section for the chronic affection which attends hypertrophy of the prostate, and relief has been found and life protracted. Or, when there is entire retention of urine, artificial outlets, with tubation, through the perinæum and also through suprapubic section, have been made with some degree of relief.

An Italian physician has resorted in a few cases successfully to electro-cautery by means of a metallic catheter. It is somewhat similar in principle to the method of Mercier, but reached by different means. Sloughing of the parts in the tract of the instrument follows the cauterization, and an artificial urethra is formed through the obstructing part. The process is not without danger.

Dr. Robert Newman, of New York, has used electrolysis successfully in a number of cases, applying the current through the urethra, not as an actual cautery, but for a very short time only as an absorbent. It is a method that has much promise, and may be used in the earlier stages of the disease to prevent the progress of the enlargement to a dangerous extent.

Electrolysis, by puncturing the gland itself by a suitable galvanic needle, has not, so far as I am aware,

been tried ; but, from the well-attested success of this method in other tumors, it would seem worthy the attention of some bold innovator.

But all these measures, except that of Dr. Newman, are to be regarded as only applicable to extreme conditions. The object of this paper is to call attention to the trouble in its earlier stages, and avoid if possible these extreme measures. The insidious approach and danger of delay have already been pointed out, and I can not insist too strongly upon timely aid. The physician should ever be on the alert to detect it in its early stages, and ever ready to watch it with unceasing care.

Much relief is often obtained at this period by anodynes, the most potent of which are opium and belladonna, used in the form of suppository. But, as the case may extend over years, caution should be used in prescribing opium, for fear of forming the opium habit. The acute paroxysms of congestion or inflammation are to be met on general principles. Of internal remedies only three have proved of any avail in my hands. These are quinine, ergot, and salicylate of sodium. Quinine is especially applicable to the engorged conditions following exposure to cold. It should be given in decided doses combined with Dover's powder. Ergot (Squibb's fluid extract), 25 drops every two or three hours, used for the same purpose, gives much relief. It has been thought by some to act specifically upon the prostate gland, but I do not see any good grounds for such an opinion. Its action is doubtless here, as under other circumstances, on the capillaries of the congested organ.

The salicylate of sodium, in from 10 to 20 grains every two or three hours, is better suited to the chronic inflammatory conditions of the bladder. I have preferred using an extemporaneously prepared article :

℞ Bicarbonate of sodium, {āā 3 ij;
Salicylic acid, {
Water 3 vj.

Mix in a mortar until effervescence ceases. Sig.: Tablespoonful every two hours.

I have seen more decided relief from this than from all other internal remedies. The antiseptic character of the remedy acts favorably upon the urine, as well as upon the irritable condition of the bladder. But we must not depend upon these remedies. No one of them, or all of them, can be relied upon for permanent relief. The catheter, judiciously used, with systematic and persistent irrigation, is the only means to ward off the inevitable results of the affection, and by a judicious use of these alone can life be prolonged and rendered comfortable. Other remedies may be used as adjuvants, but to this at last we must come.

The time for beginning the use of the catheter and irrigation must be determined by the symptoms of each case. So soon as the voiding of the bladder becomes much prolonged and painful, and there is reason to believe there is residual urine, or if the urine becomes from any cause ammoniacal, we should commence to use the catheter, and at least once in twenty-four hours empty the bladder thoroughly and wash it out with an appropriate solution. Many have been suggested, but for early use a solution of chloride of sodium will be found most generally serviceable. Later in the case biborate of sodium, boric acid, or salicylic acid may be used. The following is the formula recommended by Dr. Gouley. I have used it often with much relief :

℞ Bicarbonate of sodium..... 3 j;
Essence of gaultheria..... 3 ss.;
Glycerin 3 viij.

M. Sig.: Tablespoonful of above in pint of warm water, used once or twice a day.

Or a combination of boro-salicylate may be used. For this purpose I use boroglyceride, 3 ss.; glycerin, 3 vj. M. Sig.: Tablespoonful to pint of warm water. The method of using the injection requires tact and discretion. It should be used in such a way as not to give pain, and to secure a thorough irrigation of the bladder.

The Politzer air-bag, with an attachment of a pointed rubber nozzle supplied with stop-cock, is a very convenient and effective method. With this instrument and a Benas catheter the operation may be painlessly and effectively accomplished.

The fountain syringe, or the Davidson syringe used as a siphon, connected to a catheter by rubber tubing, may also be conveniently used, but with these care should be taken not to throw the fluid in too rapidly. The kind of catheter used has much to do with the comfort of the patient and success of the treatment.

In the earlier stages the soft rubber catheter of Jacques, or as prepared by Tiemann & Co., may be conveniently used. But as the gland becomes more seriously enlarged these can not be introduced except by using a stylet, which is objectionable.

The Benas gum catheter, made of plaited silk and smoothly covered with gum, is the best and most convenient I have ever used. It is sufficiently flexible to prevent the danger of injury, and yet stiff enough to be easily introduced without the stylet. The patient may be taught to use it himself without the fear of injury.

I have thus hurriedly pointed out the dangers of delay in this disease, and if I have succeeded in arousing an interest in it that will direct to an earlier detection and a more persistent carrying out of the simple treatment necessary to ward off its baneful sequences, I am content.

MISCELLANEOUS EXTRACTS

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The Treatment of Tapeworm.—In reply to a correspondent of the "Lancet," several communications are published in that journal, including one from Dr. F. A. A. Smith, of Cheltenham, who says that during his stay in South Africa he treated many cases, his own included, and all with success. The great point in the treatment of tapeworm, he says, is to expose the head, which is attached to the intestine by its hooklets. So long as the head is covered with faeces no medicine will do much good. His treatment is as follows: The day before giving the worm-medicine he allows no food of any kind, except plain beef-tea, or other very thin soup, and very little even of these. The first morning he gives one drachm of compound jalap powder, which generally operates three or four times during the day, and effectually clears out the bowels, bringing away at the same time large portions of the worm. The patient, of course, keeps quiet in the house. On the second morning, on an empty stomach, he gives a draught consisting of from two to three drachms of oil of turpentine and one drachm of oil of male fern in sweetened emulsion. After an hour or so he gives a dose of castor-oil. It will not be long before the whole of the worm with its head will have passed, which will be found on proper examination of the stools. The patient can then take his usual diet, and the following day will be well. He has never known this treatment fail. The doses, of course, are intended for adults. The frequent failure of the oil of male fern as an anthelmintic is, he believes, attributable to the smallness of the dose exhibited, less than a drachm for an adult being useless. The writer believes every native in South Africa to be infected with one or two tapeworms.

A Remedy for Lumbago.—According to the same journal, Professor Burggraave recommends the application of a mixture of equal parts of collodion, tincture of iodine, and ammonia-water, applied widely over the affected region with a camel's-hair brush, as an "instantaneous" remedy for lumbago.

A New Color-test for Morphine.—The "British Medical Journal" describes a new method of testing for morphine, capable of detecting the presence of so small a quantity as one two hundredth of a grain. A few drops of strong sulphuric acid are added to the solution, together with about the same amount of a solution of sodium sulphate (strength not stated). The mixture is heated in a porcelain capsule, and, as soon as it begins to give off sulphuric vapor, it is suddenly cooled, when, if morphine is present, it will assume an intense violet color. If it is further heated, it turns brown, and, after it has cooled, the addition of a few drops of water produces a vivid red color, which changes to a pale green on the addition of more water. If, now, an equal bulk of chloroform is added, and the mixture well shaken, the chloroform becomes of a bright blue color.

Cyanide of Mercury in the Treatment of Diphtheria.—Bree ("Inaug. Dissert.," "Allg. med. Ctrl.-Ztg.," "Ctrlbl. f. d. ges. Therap.") reports 318 cases of diphtheria treated with mercury cyanide, with only 4 deaths. At the outset he gives from two to three drops of a 1-to-1,000 solution in alcohol, every four hours, afterward diminishing the dose progressively. The remedy is said to oppose the extension of the morbid process and to ameliorate the subjective symptoms. In the course of a night, a threatening case has been so mitigated as to come to an

end in three days. Thus involvement of the larynx or the nasal passages and the occurrence of sequelæ are prevented with almost absolute certainty, and the convalescence is shortened.

A Substitute for Iodoform.—Chassaignac ("New Orleans Med. and Surg. Jour.") recommends the oxyiodide (subiodide) of bismuth as an efficient substitute for iodoform. He describes it as of a bright brick-red color, impalpable when well powdered, almost odorless and tasteless, insoluble in water, alcohol, ether, or chloroform, and not imparting its color to linen. It may be made, he says, so as to cost only from \$3 to \$3.50 a pound, although ten years ago, when it was recommended by Dr. A. S. Reynolds, its cost was a bar to its general adoption. Dusted on a raw surface, it produces a thin, silvery film, but causes no stinging. The author gives the following formula for its preparation, devised by Mr. J. W. England, and published in the "American Journal of Pharmacy":

Bismuth subnitrate.....	174 grains;
Nitric acid.....	3 fluidounces;
Hot water.....	12 "

Dissolve the bismuth salt in the acid in a porcelain capsule with the aid of heat, and add the hot water gradually, stirring after each addition; then add the solution gradually to a solution of 663 grains of potassium iodide in twenty-eight ounces of hot water, agitating well after each addition. The agitation should be continued until the decomposition is complete; then the precipitate should be filtered out at once, washed with warm water, dried, and powdered.

The Treatment of Nasal Diphtheria.—Mygind ("Jour. of Laryngol. and Rhinol.," "Bristol Med.-chir. Jour.") quotes Reiersen as believing that the pituitary membrane forms a nidus for micrococci more readily than almost any other mucous membrane, and as suggesting, in view of the unsatisfactory results of antiseptic injections and attempts to remove the false membrane with a forceps, the insertion of bougies containing:

Cocaine hydrochloride.....	½ grain;
Boric acid.....	15 grains;
Starch, }	
Gum arabic, }	each..... 1½ grain;
Glycerin.....	a sufficient quantity.

The amounts of the active ingredients may be reduced in the case of children. A bougie is to be passed into each nostril, and pushed along until it reaches the naso-pharynx. They melt in an hour, and others may then be inserted if relief does not occur after syringing the nostrils.

Phosphate of Sodium in the Treatment of Infantile Diarrhœa.—The "Therapeutic Gazette" calls the attention of its readers to a remedy which, although used by some practitioners, it thinks is still neglected by many—namely, phosphate of sodium. In the summer diarrhœas connected with a lack of digestive power, it remarks, in which the passages are either clay-colored or greenish, the drug often acts favorably when the ordinary remedies for diarrhœa seem to irritate rather than do good. To nursing children it may be given in the milk, ten grains in each bottle, or it may be given in a little water after a meal. It should always be used in repeated small doses, and not in

single large doses. It is particularly serviceable where there is habitual constipation with occasional attacks of diarrhoea. It probably has some distinct specific action on the glandular organs of the intestinal tract.

Spirit of Ether as a Corrigent of Opium.—Dr. A. G. Auld ("Lancet") remarks that there are few drugs more commonly prescribed than opium, and none more abused or more carelessly combined. None of the official preparations are quite destitute of the disagreeable after-action of the pure drug—that of causing headache, nausea, and loss of appetite—due to its diminishing intestinal secretion. Atropine, while to a certain extent it antagonizes the action of opium on the central nervous system, rather adds to its effect on the alimentary secretions. The author has observed good results from giving opium in conjunction with ether, which, he says, is one of the most powerful stimulants of secretion that we know of. He generally prescribes equal parts of tincture of opium and spirit of ether. [We presume the author refers to the spiritus ætheris of the United States and British Pharmacopœias. Concerning the spiritus ætheris *compositus* (Hoffman's anodyne), the authors of the United States Dispensatory say: "This preparation is on many occasions a useful adjunct to laudanum, to prevent the nausea which is excited by the latter in certain habits."]

Phosphorus in the Treatment of Broncho-pneumonia.—Faria ("Brazil Med.," "Lyon méd.") has made use of phosphorus successfully in the treatment of three children, from six months to six years old, who, in the course of attacks of broncho-pneumonia, were threatened with asphyxia, as shown by coldness of the extremities, cyanosis, and a very frequent and thready pulse. He gave from five to twelve drops of the ethereal tincture of phosphorus in a draught of some cordial preparation. At the same time he used frictions, sinapisms, and inhalations of oxygen. He has not found this treatment successful with old persons.

Corrosive Sublimate in the Treatment of Diphtheria.—J. Stumpf ("Münchener med. Woch.," "Ctbl. f. Chir.") gives his results in the treatment of thirty-one cases, only two of which proved fatal, in which he used a spray of a solution of from 1 part to 4 parts of corrosive sublimate in 3,400 of distilled water and 600 of peppermint water. About a teaspoonful at a time was applied to the pharynx in the form of spray, at first every hour, and then every two or three hours. Except a very transitory salivation, no toxic symptoms were observed, but the fever rapidly declined, the diphtheritic process ceased to extend, and the difficulty in swallowing was mitigated. The membrane usually disappeared in from three to five days more. The patients ranged from nine months to twelve years in age, most of them being between three and six years old. In six of the cases the disease accompanied scarlet fever, in five there were marked laryngeal symptoms, and in twenty the phenomena were simply those of pharyngeal diphtheria.

Cocaine as an Antidote to Strychnine.—Bignon ("Genio Méd.-quir.," "Gaz. hebdom. de méd. et de chir.") finds, as a result of experiments on dogs, that hypodermic injections of cocaine, kept up until the strychnine has been eliminated, prevent a fatal result in cases where the dose of strychnine administered is not excessive, and retard it when large doses are used.

Carbolic Acid in the Treatment of Puerperal Septicæmia.—According to "Nouveaux remèdes," Sriedey recommends a pill containing a grain and a half of phenic acid, with a mixture of equal parts of gum arabic, powdered licorice, and soap—from two to ten such pills to be given in twenty-four hours.

Ichthyol in the Treatment of Erysipelas.—Nussbaum ("Ctbl. f. Chir.") recommends smearing the entire erysipelatous surface with an ointment composed of equal parts of ichthyol and vaseline, to be covered with a dressing of salicylic acid. He says that the action of the diluted ichthyol so interferes with the nourishment of the erysipelas cocci that their multiplication and activity cease. He mentions good results in five cases.

Spina Bifida; a New Method of Cure after Rupture of the Sac.—Davidson ("Glasgow Med. Jour.") reports a case of spina bifida in which, despite the greatest care, the sac ruptured on the third day

after birth. An unsuccessful attempt was made to prevent the out-flow of the fluid by means of a pad and bandage, but at the end of a week it was evident that stronger means must be used to save the child's life. A piece of ordinary sponge was steeped a few hours in dilute hydrochloric acid. From this a thin shaving, of about the thickness of half a crown, was taken, and its edges were trimmed so as exactly to fit the wound. After this had been steeped in a two-and-a-half-per-cent. solution of carbolic acid, it was inserted between the lips of the wound well into the cavity, the edges of the sponge and the surface of the wound being in the same plane. Over the part was placed a piece of protective silk, secured with adhesive plaster. Three days later granulations were seen extending into the slice of sponge from each side, and only a trace of fluid could be found escaping. The dressing was then reapplied, and left in place for a week, at the end of which time the granulations had completely covered in the sponge, and no trace of the escape of fluid could be detected. A few days later the wound was entirely healed, and covered with healthy-looking epidermis. Eight months later the child was enjoying good health.

The Treatment of Gonorrhœal Cystitis.—According to a contributor to the "Union médicale," M. Diday advises the patient to take, every half-hour for one forenoon, a tablespoonful of an infusion of 3 parts of hyoscyamus leaves in 100 of boiling water, refraining from all other drinks during that time. Its use is to be stopped if the mouth feels dry or if there is any drowsiness. This infusion is said to give relief almost always, and sometimes to cure exceedingly painful cystalgias. Applications of ice are useful when the cystitis is accompanied by prostatic engorgement, seminal emissions, or anal tenesmus; they are contra-indicated by the hæmorrhoidal habit. If the cystitis becomes chronic, it is to be treated with terebinthinate preparations, the application of deep revulsives to the hypogastrium, the loins, and the perineum, and the use of the waters of Contrexéville and Evian. Whenever the affection is supposed to be kept up by the darts of diathesis, the waters of Uriage are recommended, to be drunk and used as baths.

Pavesi's Hæmostatic.—The "Gazette de gynécologie" gives the following formula:

Sulphophenic acid,	} each	25 parts;
Alcohol,		
Benzoic acid,	} each	5 "
Tannic acid,		
Glycerin		125 "
Rose-water		200 "

The sulphophenic acid is made by digesting 2 parts of sulphuric acid and 1 part of carbolic acid together for a few minutes over a water-bath. The benzoic acid is dissolved in alcohol and glycerin, and the tannin in alcohol. For tamponing the vagina, M. Chéron recommends cotton soaked in this mixture. While it coagulates the blood perfectly, it does not act as an irritant.

A New Treatment for obstinately recurring Eczema.—Crocker ("Brit. Med. Jour.") has found counter-irritation by means of mustard or stronger applications of great service in treating recurrent eczemas, and reports several brilliant cures. He varies the location for the counter-irritants according to the part affected by the eczema. Thus, for the face alone, it is behind the ears; for the face and forearms, on the nape of the neck; about the genitals and legs, over the lumbar region; and if only one leg is affected, on the hip over the great sciatic nerve. The proper treatment for the eczematous patch is to be continued at the same time.

Resorcin in Acute Gonorrhœa.—Lychowski ("Vrtljschr. f. Derm. und Syph.") reports six cases of acute gonorrhœa cured within six days by injections of a two- to three-per-cent. solution of resorcin. The injected fluid must be worked by the fingers into the deeper parts of the urethra.

Cannabis Indica in the Treatment of Diarrhœa.—F. F. Bond and B. E. Edwards ("Practitioner") cite testimony from several sources as to the efficiency of Indian hemp in the treatment of diarrhœa, and state that they have used it in nearly all forms of diarrhœa with marked benefit, especially in summer diarrhœa, in conjunction with morphine. They think it increases the astringent and anodyne action of morphine

and stimulates the nervous system. For an ordinary adult, they generally use the following mixture:

Tincture of cannabis.....	10 minims;
Solution of morphine (Br. Ph.).....	5 or 10 minims;
Aromatic spirit of ammonia, {	each... 20 minims;
Spirit of chloroform, {	
Water, to	1 ounce.

This quantity is to be given every one, two, or three hours, according to circumstances. No food should be taken for several hours, but a little brandy and water.

Ethereal Injections in the Treatment of Cystitis.—Chandelux ("Lyon méd."; "Ann. des mal. des organes génito-urinaires") has made use of vesical injections of a thirteen-per-cent. ethereal solution of iodoform in a number of cases of obstinate cystitis, and reports satisfactory results. He regards the iodoform as playing only a subordinate part, and attributes almost all the efficiency of the treatment to the ether, which, he thinks, acts by becoming vaporized and thus distending the contracted bladder. The fact of its vaporization is shown by a tympanic percussion sound in the hypogastrium. Distension of the bladder by the forcible injection of a liquid, he remarks, is often not well borne; the bladder is intolerant, and contracts spasmodically when such a distending force is made use of. But distension by means of a vapor is so gentle and manageable—the expansive force of the gas and the contractile power of the bladder being very nearly balanced—that spasm does not result. The iodoform is expelled with the urine, and is not deposited on the interior of the bladder.

Fluid Extract of Quebracho as an Application to Wounds.—Bourdeaux ("Arch. méd. belges"; "Rev. gén. de clinique et de therap.") says that fluid extract of quebracho, applied to a wound, a burn, an ulcer, or a frost-bite, is more healing even than iodoform. Spread over such a surface, it dries in the course of half an hour, forming a tough and very adhesive brownish crust, which can be removed only with the aid of warm water; and cicatrization advances rapidly.

The Sulphur Treatment of Phthisis.—M. Dujardin-Beaumetz, the well-known physician to the Cochin Hospital in Paris, while not a member of the teaching faculty of medicine, gives a number of interesting free lectures at the hospital on therapeutical novelties. He lately took up the subject of getting sulphur introduced into the system in cases of phthisis, which is now much thought of since Bergeon's method was introduced. Vaseline oil was first used, as M. Villi had established, that at 13° C. [55.4° F.] 100 grammes [about 3½ oz.] of this oil would dissolve 60 centigrammes [about 9 grains] of anhydrous sulphurous acid. A subcutaneous injection of such a mixture is well borne by the cellular tissues, and under the influence of injections of from two to three cubic centimetres the patients had less cough and expectoration and slept better. Direct inhalations of sulphurous acid were first used at the Cherbourg Military Hospital; 20 grammes [about 300 grains] of sulphur to the cubic metre of space were burned, and after twelve hours the patients were put into the room and kept there nine hours. In a short time, under the influence of this treatment, the bacillus disappeared from the sputa. Dr. Dujardin-Beaumetz used this plan, and burned 250 grammes [about 4,000 grains] of sulphur in an inhalation-room that was perfectly closed and measured 25 cubic metres. In an hour the patients were brought in and allowed to stay four hours. The results were wonderful, for the cough was diminished, sleep was better, and the expectoration was no longer purulent. In one instance hæmoptysis stopped. M. Ernest Labbé calls attention to the fact that Pliny said that doctors in his time used to send their phthisical patients to breathe the emanations from the volcanoes. Without doubt these were complex in character, but still they consisted mostly of sulphurous-acid gas, so that once more modern therapeutists are confirming the facts known to ancient empirics.

Antifebrine in Febrile Diseases of Children (Widowitz, "Revue mensuelle des mal. de l'enfance," from "Wiener med. Wochenschrift," 1887, Nos. 17 and 18).—The author's observations were made upon fifty-four cases, made up as follows: Scarlatina, 4; measles, 11; measles

and pneumonia, 11; the remainder being tuberculosis, erysipelas, pneumonia, bronchitis, amygdalitis, gastritis, and enteritis. In all cases the temperature began to fall within ten to twenty minutes after the dose. The rapidity of the decline depended less upon the dose than upon the disease and idiosyncrasy. The amount of fall in all cases was remarkably constant. Upon the general condition only favorable effects were witnessed. Excitement was replaced by peaceful sleep. In several cases where death seemed imminent, as in pneumonia, the patients being semi-comatose, with rapid pulse and superficial respiration, a complete transformation of the scene was brought about by the drug. Its effects were less striking in some diseases than in others. Thus, in scarlatina and erysipelas the fall in temperature was noticeably less than in measles, pneumonia, both croupous and catarrhal, and tuberculosis. The pulse was not always reduced in frequency proportionately to the temperature. It became fuller, however, and the respirations were deeper and more regular. The drug was administered in the form of a powder; for children from three to four years the dose given was ten centigrammes (gr. 1½). The entire quantity for twenty-four hours can be increased to two grammes (gr. xxx). Antifebrine had no influence upon the duration of the disease. In some of the cases of croupous pneumonia slight cyanosis was seen.

A Practical and Successful Mode of Disinfecting the Room in Case of Cancer.—Dr. H. Gerould, of Cleveland, O., writes that from September, 1886, until March, 1887, he had in his house, and under his daily care, a patient with uterine cancer. To counteract the offensive odor of the disease he made repeated experiments with the prominent disinfectants. The following proved to be all he could desire, viz.: 3 drachms of potassium nitrate dissolved in 8 ounces of Platt's chlorides, full strength. In this he saturated thin muslin (cheese cloth), then dried it thoroughly. When it was necessary to cleanse or purify the room, he burned small strips of the cloth on a shovel in different parts of the room and under the bed-clothing. The effect was magical. Almost instantly all offensive odors disappeared. This was repeated when necessary, the potassium nitrate being used to aid combustion. The result was such that no discomfort was experienced by the attendants, and no offensive odor could be detected in the adjoining rooms. This was daily remarked by friends. The undertaker said it was the first case of death from cancer where he could detect no trace of the disease. This method of disinfection, the writer adds, would be equally efficient in all contagious, pestilential, or infectious diseases.

Treatment of Burns.—Von Mosetig-Moorhof ("Wiener med. Presse"; "Cent. f. Chir.") complains that hitherto the principles of antiseptics have been for the most part very slightly considered in the treatment of burns. He recommends the use of iodoform, and refers to the analgesic operation of that drug. The patients become more quiet a few minutes after the application, and can, after a quarter of an hour, bear moving with comparative ease. With some precaution, there is no danger of poisoning. He opens the blisters, cleanses the surface carefully with wadding dipped in a half-per-cent. solution of salt, and then covers the burned parts with several layers of iodoform gauze, first sprinkling the very badly injured places with iodoform powder. This he covers with a large piece of gutta-percha tissue, then spreads absorbent cotton over the entire surface, and applies a bandage. This dressing remains as long as cleanliness or fever does not render a change necessary, usually from one to two weeks. In case the dressing is penetrated to a great extent by the discharge, the outer layers of the dressing may alone be changed, leaving the inner untouched. Complete occlusion is impracticable on the face, so here a five-per-cent. ointment of iodoform and vaseline, covered with a mask of gutta-percha tissue, may be applied, and daily renewed.

Papayotin in Fissures of the Tongue.—Schwimmer ("Wiener med. Woch."; "Nouv. remèdes") has succeeded in the treatment of fissures of the tongue with papayotin after failure with chromic acid, iodoform, and nitrate of silver. He used a solution of from 1 to 2 parts of papayotin in 10 parts each of glycerin and distilled water, applied five or six times a day, the fissure being previously well dried. No maceration takes place, but the pain is stopped and the epithelium renewed. The treatment was used in twenty-five cases, all of which were com-

pletely cured, except one, which was of a syphilitic nature, and in that case, although antisyphilitic treatment had failed, amelioration followed the use of papayotin.

Antipyrine in Articular Rheumatism.—Bernheim and Simon ("Rev. méd. de l'Est"; "Lyon méd.") report the results observed by them in thirty-four cases. The good effect was undoubted in twenty-eight cases, while in six there was little if any effect. Of nineteen cases of acute or subacute rheumatism, the remedy was effective in eighteen. Of twelve cases in which there was no fever, incomplete or doubtful success was recorded in two, both of which were chronic. Of two cases of gonorrhœal rheumatism, amelioration was observed in one, and absolutely no effect in the other.

An Emulsion of Cod-liver Oil.—The British Pharmaceutical Conference's "Formulary of Unofficial Remedies" ("Brit. and Colon. Druggist") gives the following formula:

Cod-liver oil	40 fluidounces;
Powdered tragacanth	200 grains;
Tincture of benzoin, }	
Spirit of chloroform, } each.....	$\frac{1}{2}$ fluidounce;
Glycerin, }	
Oil of cassia.....	2 fluidrachms;
Distilled water.....	a sufficient quantity.

Place the oil in a dry Winchester quart, and add the tragacanth, tincture of benzoin, and spirit of chloroform, previously well mixed; agitate briskly for a minute; then add all at once a pint of distilled water, and agitate as before; lastly, add the essential oil, the glycerin, and enough distilled water to make four pints. Shake vigorously for a few minutes. The dose is from 2 to 8 fluidrachms.

Treatment of Chronic Abscess by Irrigation.—In his address before the British Medical Association, Professor Hamilton described the following method of treatment of chronic abscesses: A long, curved trocar and cannula are pushed through the abscess and made to transfix it four or five inches; a piece of rubber tubing with a single hole about the center is drawn through the cannula by a thread connected with the cutting end of the trocar; the aperture in the tube being lodged midway between the wounds, the cannula is removed. One end of the tube is attached to an irrigating can hung above the patient's bed; the other end leads to a reservoir at the bedside. By means of a stop-cock the flow can be regulated as desired, a flow escaping drop by drop being sufficient to keep the contained fluid and the wall of the abscess aseptic. Distension of the sac can also be made when desired by compressing the exit portion of the tube. He considers a solution of chloride of zinc, 1 to 200, the best antiseptic to employ, maintaining that he has obtained the best possible results from this in spite of the assertion of Koch that chloride of zinc is inert as a germicide. He believes that if it does not kill the germs it renders a surface a barren cultivation-field. After about a week the abscess wall has undergone such decided alteration that continuous irrigation is not necessary, but occasional syringing is sufficient for the perfect healing of the cavity.

Oil of Sassafras to Mask the Odor of Iodoform is recommended by C. E. Dodsley ("Brit. and Colon. Druggist"). "The addition of four drops to the ounce of iodoform," he says, "completely covers the disagreeable odor so characteristic, nor is the presence of the oil rendered evident to the most sensitive olfactory organs."

Potassium Permanganate as a Preventive of Diphtheria.—Johannsen ("St. Petersburger med. Woch.") argues that the secretions of the mouth and nose accumulate during the night and undergo more or less decomposition, thus favoring the action of the diphtheria germ. He therefore advises washing out the mouth and the nasal passages of children every night with a clear-red solution of potassium permanganate. He thinks his observation warrants the statement that the practice is efficient.

The Treatment of Psoriasis with Iodide of Potassium.—Haslund's article is a very careful and important study of the effect of potassium iodide upon psoriasis, and, incidentally, upon the general system when taken in large and continued doses. He believes ("Vierteljschr. f. Derm. u. Syph.") that the iodide is equal, if not superior, to arsenic in the

treatment of psoriasis; but that to get its good effect it must be given in increasing doses and for a long period. The initial dose is one tablespoonful, four times a day, of a 1-to-20 solution. For children it is well to begin with the same dose of a solution of half strength. On the third day six tablespoonfuls are given, and so the amount is increased every third day until the patient is taking the 150 grains daily. Then the strength is increased by 30 grains every third day, the same dose being continued. When reaching the stronger solutions it is best to have the patient take his medicine five or six times a day, taking two spoonfuls at a time, and to follow with a glass of water. Six hundred grains a day are about as much as need be given, though Haslund has given as much as 750.

Fifty patients in all were treated by this method, of whom forty were cured, four improved, and six remained unaffected. The duration of treatment was from seventeen days to thirteen weeks, with an average of about seven weeks. Improvement showed itself in most cases during the fourth or fifth week of treatment, and with a daily dosage of between 300 and 450 grains. The skin usually clears up rapidly when once improvement begins. Most of the patients bore the large doses well, though at the beginning and while they were taking the larger doses symptoms of iodism, such as derangement of the stomach, diarrhœa, headache, coryza, and the like, are met with. These require but a reduction of the amount for a few days, when they will disappear. One patient showed dangerous symptoms of heart failure after he had taken 33,840 grains of the salt. The continued large doses seemed rather to improve the general condition of the patients than the reverse, and most of them increased in weight.

Large doses of the iodide always increased the rapidity of the pulse; the pulse-rate usually reached 100 during the first two weeks, and then slowly rose to 130 or 140. The iodide seemed to exert no effect upon the glands, testes, ovaries, and mammæ. As a rule, the appetite was unaffected and the bowels remained regular in their action. In the beginning of the administration of the salt the conjunctivæ became slightly red with some lacrymation, there was some running at the nose, with hoarseness of voice; but these symptoms were not observed with the larger doses. In a few cases salivation occurred, and in nearly all cases there was increased urination. Albuminuria of passing nature was observed in two cases.

Treatment of Syphilis.—Vidal ("Gaz. des hôp.") places most faith in the inunction plan of treating syphilis, using the following ointment:

Mercurial ointment.....	60 parts;
Balsam of Peru.....	4 " M.

The inunctions are to be made daily on the parts of the body devoid of hair, and to be continued for two or three months. While using this, the teeth are to be kept clean with the following:

Powder of rhatany.....	5 parts;
Powder of red cinchona.....	15 " M.

After about six weeks the frictions need not be made oftener than once in two days. Internally he gives Van Swieten's solution. To infants under two years of age he gives the same solution in milk, while he treats sucking infants by inunctions.

In late secondary syphilis he prescribes:

Biniodide of mercury.....	$\frac{1}{2}$ grain;
Potassium iodide, }	
Distilled water, } each.....	225 grains;
Syrup of cinchona.....	2,750 " M.

Of this two tablespoonfuls are given during the day in peppermint water—one before breakfast and one before dinner, or one morning and night. In tertiary lesions he gives potassium iodide in 30- to 60-grain doses during the meals or afterward, in a large quantity of milk or aromatic infusion. If it is not tolerated by the stomach, it may be given per rectum with the addition of a few drops of laudanum. If it is still not well borne, he substitutes the *sirop iodo-tannique* for it.

A Fumigation for Asthma.—Sawyer ("Birmingham Med. Rev."; "Lyon méd.") recommends the following as having afforded the best results that he has observed among those of a great number of inhalants:

Potassium nitrate, } each..... 2 parts;
 Powdered aniseed, }
 Powdered stramonium leaves..... 4 "

A thimbleful of the mixture, fashioned into a little cone, is placed on a plate and lighted at the top.

Resorcin in the Treatment of Skin Diseases.—The "Union médicale" credits Ihle with the following formula:

Resorcin..... 10 to 15 parts;
 Castor-oil..... 90 "
 Alcohol..... 300 "
 Balsam of Peru..... 1 part.

This liniment is recommended by the author in the treatment of chromophytosis, eczema marginatum, alopecia areata, and seborrhœa.

The Ætiology and Period of Incubation of Croupous Pneumonia.—R. Caspar ("Berlin. klin. Woch.") has carefully studied two hundred and four cases of croupous pneumonia which have come under his care within the past five years, with the view of determining the ætiological factors and the period of incubation of that disease. His cases occurred in epidemics, and he believes decidedly in the contagiousness of croupous pneumonia; a few cases which he observed favor this belief very much. One of the most striking instances was where a son from another village came to visit his father, who was lying ill with pneumonia. The son remained only part of the day and then returned to his village, which was entirely free from cases of pneumonia. Four days afterward he was taken ill with an attack of that affection. A number of other cases that the author observed made him draw the inference that the period of incubation was four days. He could not observe any meteorological conditions to explain the outbreak of the epidemics, nor during an epidemic did he notice that different conditions of the barometer had any influence upon the spread of the disease. His cases occurred also mostly during the first four months in the year. He does not consider, as some observers do, that pneumonia is secondary to bronchitis. He concludes his article as follows: 1. Fibrinous pneumonia is an infectious disease. 2. It is contagious. 3. Its period of incubation is four days. 4. Low temperature, slight absolute humidity, and strong winds seem to favor its spread.

Relief of Tympanites by Puncture of the Abdomen.—This operation, which is frequently performed by veterinary surgeons on the lower animals, has seldom been done on the human subject, although it seems to have usually been successful. Dr. J. W. Ogle has collated in the "Lancet" most of the literature on the subject from the earliest times to the present, and compared the opinions of the gentlemen who have performed the operation, showing clearly its value and safety. In extreme flatulent distension the pressure upon the diaphragm and the sympathetic nerves produces the effect of paralysis of the diaphragm, limiting the expansion of the chest cavity, and the exchange of respiratory gases in the blood, while it compresses the liver and interferes with the action of the heart. The dyspnœa and interruption of the circulation thus produced will end life in a short time if not relieved. In such cases, after ordinary means of relief have failed, it is recommended to plunge a fine trocar and cannula into the most distended portion of the abdomen and allow the gas to escape. This is always followed by an immediate relief of the symptoms, sometimes temporary but often permanent. If the relief is only temporary, the operation may be repeated a number of times. At times the gas seems to exist in compartments, as if separated by sharp bends and turns of the intestine. In these cases several punctures may be needed. A number of cases of obstinate constipation, dependent probably on paresis of the muscular wall of the intestine from overdistension, are reported to have been cured by the removal of gas in this manner. Possibly relief may be obtained in the same way in cases of volvulus. The chief danger to be apprehended is that of peritonitis, but this appears to be very slight. In a few cases fecal matter was found in the peritoneal cavity, but upon investigation it seemed that the escape had been post-mortem rather than ante-mortem. The operation is certainly indicated in all such cases, at least as a *dernier ressort*, but it must not be delayed until irreparable mischief has been effected by the prolonged pressure.

The Pupil-symptoms met with after Injuries to the Head.—Hutchinson, Jr. ("Ophth. Rev.," April, 1887), has been investigating the condition of the pupil after injuries to the head, and makes the following brief statement in regard to the subject as far as yet investigated: In concussion of the brain, during the stage of collapse, the pupils are neither contracted nor dilated, and they respond to strong illumination. This response is not always as rapid as it should be normally; not infrequently the pupils tend toward slight myosis, and inequality in size is occasionally seen. When one pupil only is markedly dilated, there are sometimes signs of irritation, probably by small hæmorrhages into the cortex on the same side. Whatever view may be taken as to the condition of the cerebral circulation, it is not doubted that the cerebral functions are, to a more or less complete degree, suspended by the violent shaking that the brain undergoes. Hence, the condition of the pupils would be expected to be the same as during sleep and the anæsthetic stage of chloroform inhalation, and in animals deprived by experiment of their cerebral lobes. In a few cases of concussion, fixed mydriasis on both sides has been noticed for a time. Although it is at present impossible to fully account for the cases in which one-sided mydriasis follows concussion and persists for a considerable period, still these cases are exceptional, without evidence of severe injury to the brain. With the onset of inflammatory symptoms, the pupils become strongly contracted, although the lesion may be at some distance from the corpora quadrigemina.

Treatment of the Sound Limb in Sciatica.—Dumontpallier and Raymond ("Comptes rendus de la soc. de biol."; "Lyon méd.") have found in several cases of sciatica that irritation of the opposite limb, and especially spraying it with chloride of methyl, produced speedy amelioration of the pain. The method is said not to be of so much value as treatment addressed directly to the course of the affected nerve, but it is accounted interesting as affording an example of localized analgesia due to inhibition, certain sensory centers in the spinal cord being inhibited by irritation of neighboring sensory centers.

A Remedy for Hoarseness and Catarrhal Coughs, said to be rapid in its action, is prepared according to the following formula ("L'osservatore"; "Dtsch. Med.-Ztg."):

Ammonium acetate..... 3 parts;
 Potassium bromide..... 3 "
 Tincture of belladonna..... 1½ "
 Tincture of aconite..... 2 "
 Infusion of balsam of Tolu..... 150 "
 Syrup of balsam of Tolu..... 50 "

A tablespoonful is to be taken every three or four hours.

Iodoform in the Treatment of Gonorrhœa.—Thiéry ("Prog. méd."; "Ctbl. f. klin. Med.") recommends injections of oil of sweet almonds holding finely powdered iodoform in solution. Six patients so treated were cured in the average space of thirteen days, about seventeen injections being used. The anodyne action of the iodoform is considered important as well as its germicide properties. Before each injection, the urethra should be washed out with lukewarm water.

Salicylic Acid as an Application to Warts.—The "Union médicale" credits E. Vidal with the following formula:

Salicylic acid, } each..... 1 part;
 Alcohol, }
 Sulphuric ether..... 2½ parts;
 Collodion..... 5 "

The warts are to be painted with the solution daily.

The Time for the Administration of Acids, Alkalies, etc.—A correspondent of the "British Medical Journal" says: "My teacher, Sir Robert Christison, as far as I can remember, taught us the following rules: Alkalies should be given before food. Iodine and the iodides should be given on an empty stomach, when they rapidly diffuse into the blood. If given during digestion, the acids and starch alter and weaken their action. Acids, as a rule, should be given between the digestive acts, because the mucous membrane of the stomach is in a favorable condition for the diffusion of the acid into the blood. Acids may be given before food when prescribed to check the excessive formation of the acids of the gastric juice. By giving it before meals

you check the osmosis stomach-ward of the acid-forming materials. Irritating and dangerous drugs should be given directly after food, such as the salts of arsenic, copper, zinc, and iron, except where local conditions require their administration in small doses before food. Oxide and nitrate of silver should be given after the process of digestion has ended; if given during food, chemical reactions destroy or impair their special attributes, and defeat the object for which they were prescribed. Metallic salts, especially corrosive sublimate, also tannin and pure alcohol, impair the digestive power of the active principle of the gastric juice, so should appear in the stomach during its period of inactivity. Malt extracts, cod-liver oil, phosphates, etc., should be given with or directly after food, so that they enter the blood with the products of digestion."

Lemon-juice in the Treatment of Epistaxis.—M. Geneuil, of Montguyon, writes to the editor of the "Bulletin général de thérapeutique" that he has met with great success in the treatment of epistaxis, even when all other hæmostatics had failed, by injecting lemon-juice into the nasal passages. He uses a glass urethral syringe, with which he first clears away clots by injecting cold water, and then throws in briskly a syringeful of freshly expressed lemon-juice. If the bleeding does not cease, the injection is repeated in a minute or two, but ordinarily one is enough.

Iodoform in the Treatment of the Obstinate Vomiting of Pregnancy.—Dr. John B. Stone, an acting assistant surgeon in the army, writes to us from Fort Maguinnis, Montana, as follows: "I have had several cases where iodoform, suspended in glycerin, applied on cotton against the os uteri, has controlled obstinate vomiting in pregnancy. The treatment is to be continued daily for a week or so, and then stopped, and in some cases there will be no further vomiting for many days. The treatment might, of course, often be objected to by patients."

A Snuffing-powder for Coryza.—M. Pierre Vigier ("Gaz. hebdom. de méd. et de chir.") considers a powder composed of equal parts of powdered starch, boric acid, and tincture of benzoin to possess certain advantages, especially that of not being too light. The mixture should be triturated for a moment, then dried with a gentle heat, and put into a box, without pushing the powdering process too far. The rapidity of the effect is proportionate to the amount of the powder used and the frequency with which it is employed.

Iodide of Mercury and Morphine.—Herding ("Pharm. Ztg."; "Dtsch. Med.-Ztg.") calls attention to the danger of prescribing morphine and iodide of mercury at the same time, on account of the formation of a double iodide of the two bases, which is highly poisonous.

Croton-Oil as a Remedy against Tapeworm.—The "Gazette médicale de Montréal" attributes the following formula to Persh:

Croton-oil.....	1 drop;
Chloroform.....	1 drachm;
Glycerin.....	1 ounce.

To be given early in the morning, a saline purgative having been given the night before.

Common Salt in the Treatment of Migraine.—Rabow ("Therap. Monatsh."; "Ctrbl. f. klin. Med.") states that, where an attack of migraine is ushered in with gastric symptoms, common salt, taken at once, usually checks it, although it sometimes fails. From half a teaspoonful to a teaspoonful is to be swallowed dry, and then the patient is to drink a little water.

Treatment of Psoriasis.—Vidal ("Jour. de méd. et de chir.") believes that the oil of cade is the most efficacious remedy for psoriasis, and employs the following formula:

Glycerole of starch.....	100;
Green soap.....	5;
Oil of cade.....	100. M.

The patient is directed to rub this in every morning, sleep in a flannel gown, and wash the medicament off in the morning.

Treatment of Pruritis Senilis.—For the treatment of this obstinate affection Machiavelli recommends ("Gaz. med. ital.") external remedies

as most efficacious. As general measures, baths medicated with sulphate of potassium, and the avoidance of all excess in diet. The patient must abstain from scratching, and when a paroxysm of itching comes on, he should dab on the pruriginous spots a one- to two-per-cent. solution of carbolic acid in water. If papules appear and the pruritus is worse at night, cloths soaked with the same solution are to be bound on. An itching scrotum is to be worn in a suspensory bandage enveloped in absorbent cotton. In persistent itching, specially of the female genitals, repeated bathing with the following—

Carbolate of sodium.....	25 grammes;
Cologne-water.....	75 "
Glycerin.....	100 "
Water.....	300 " M.

—will be useful, especially if followed by compresses soaked in the following:

Distilled water.....	300 grammes;
Alcohol.....	100 "
Hydrochloride of cocaine.....	75 centigrammes. M.

When the patient can not resist the impulse to scratch and does scratch unconsciously at night, the parts are to be painted with

Ammoniate of mercury.....	1 gramme;
Oxide of zinc.....	4 grammes;
White vaseline.....	40 "
Cocaine.....	25 centigrammes. M.

Treatment of Pruritis Vulvæ.—Simson recommends ("Lancet"). for this annoying affection the application at night to the vulva of cocaine, 15 gr.; aque dest., q. s.; lanolin, $\frac{3}{4}$ ss., and bathing the parts in the morning with lotio hydrarg. nigra.

The Dietetic Treatment of Obesity.—A contributor to the "Union médicale" credits M. Dujardin-Beaumetz with the following dietary for the reduction of obesity: *Breakfast* at 8 o'clock.—Two ounces of cold meat, an ounce of bread, eight ounces of weak tea without sugar. *Luncheon* at noon.—Two ounces of bread, four ounces of meat or stew or two eggs, four ounces of fresh vegetables, half an ounce of cheese, fruit *ad libitum*. *Dinner* at 7 o'clock.—No soup, two ounces of bread, four ounces of meat or stew, four ounces of fresh vegetables, salad, half an ounce of cheese, fruit *ad libitum*. In conjunction with this course, purgatives should be taken rather frequently, either mineral waters, pills, or powders, and the subject should take exercise in proportion to his strength, and employ massage.

Creasote in the Treatment of Pulmonary Phthisis.—Fraentzel ("Dtsch. med. Woch."; "Gaz. hebdom. de méd. et de chir.") has used this remedy since 1878, chiefly in cases without fever, cough, or complications. The following formula was employed:

Creasote.....	13 parts;
Tincture of gentian.....	30 "
Brandy.....	250 "
Sherry, enough to make.....	1,000 " filtered.

A tablespoonful is given two or three times a day, in a glass of water, and at the same time two tablespoonfuls of cod-liver oil are given daily. The patients are kept, day and night, in freely ventilated rooms and are fed abundantly. Improvement is manifested by gain in weight, increase of the appetite, diminution of the cough, expectoration, and pain, a reduction of the area of dullness, and the disappearance of bronchial souffles. Out of four hundred patients treated by this method, a hundred and fifty have been permanently benefited.

The Treatment of Alopecia Areata.—Schachmann has found the treatment of this disease with blisters to be the most efficient, and reports ("Ann. de dermat. et de syph.") twenty-nine cases treated by him in this way. The duration of his treatment was never more than three months, and generally less than two. In no case were the blisters followed by erysipelas or other complications. His mode of employing blistering was as follows: A blister as large as the denuded area is applied upon the patch and left on until the bullæ form, then removed, and the blister dressed. When the skin is dry, usually on the third day, a new blister is applied, and so on up to three, six, or even ten blisters. The remainder of the head is rubbed morning and night with oil of turpentine 20 parts, ammonia-water 5 parts, and water 100 parts.

If there is but one moderate-sized patch or a few small ones, blisters are applied to all simultaneously. But if the patch is very large, or when the whole scalp is affected, the head is divided into districts, and these are attacked successively. The hair is shaved from about the patches.

The Treatment of Ophthalmic Migraine.—G. de la Torrette and P. Blocq ("Progr. méd.") report a case of the second form of ophthalmic migraine described by M. Charcot in which the administration of bromide of potassium effected a cure. The patient was subject to attacks of migraine attended with disturbances of vision (scintillating scotoma) and with transitory motor aphasia. In addition to these symptoms during the attacks, he suffered with various disturbances of the sense

of touch in different parts of the body. He took the bromide according to the following formula: 30 to 45 grains daily during the first week, 45 to 60 during the second week, 60 to 75 during the third week, and 75 to 90 during the fourth week. Then the series was begun over again. He took the medicine for nearly a year, and when seen fifteen months afterward he had been quite free from any attacks or from any symptoms of his former affection.

Pruritus Cutaneus cured by Salicylate of Sodium.—Icard ("Gaz. des hôp.") reports a case of general pruritus of eight months' duration which was cured after taking forty-five grains of salicylate of sodium for two days. The case had not yielded to arsenic, bromide of potassium, atropine, etc.

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